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Dial Corporation

Final Closure Report

The Dial Corporation Facility
South Gate, California

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VOLUME I

Text, Tables, Figures, Plates,
Appendices A, D, E, and F

May 1997

Document Number 2277-006

ENSR

FINAL CLOSURE REPORT

THE DIAL CORPORATION FACILITY, SOUTH GATE, CALIFORNIA

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Reference No.: 2277-006

May 1997

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LIST OF ABBREVIATIONS

AOC	Areas of Concern
AGTS	Aboveground Storage Tanks
BTEX	Benzene, Toluene, Xylenes and Ethylbenzene
COCs	Constituents of Concern
DWR	Department of Water Resources
HCHO	formaldehyde
LUFT	Leaking Underground Fuel Tank
LACDPW	Los Angeles County Department of Public Works
MBAS	Methylene Blue Active Substances
MCLs	maximum contaminant levels for a drinking water resource
ml	milliliters
mg	milligrams
mg/l	milligrams per litre
mg/kg	milligrams per kilogram
PCE	Perchloroethylene
pH	log (base 10) of the hydrocarbon ion concentration
ppmv	parts per million by volume
PRGs	Preliminary Remediation Goals
RWQCB	The Regional Water Quality Control Board-Los Angeles Region
SESOIL	Seasonal Soil Compartmental Model
TEG	The Environmental Group
TCE	trichloroethene or trichloroethylene
TPH	Total Petroleum Hydrocarbons
TSS	Total Settleable Solids
U.S. EPA	United States Environmental Protection Agency
USTs	Underground Storage Tanks
VOCs	Volatile Organic Compounds
WMUs	waste management units

1.0 INTRODUCTION

This report presents the results of a closure and post-closure assessment program for the former Dial Corporation (Dial) facility at 9300 Rayo Avenue, South Gate, California. The closure sampling and analytical program was conducted from September to October 1996, consistent with the scope and procedures outlined in the Closure Plan dated July 1, 1996 (EMCON, July 1, 1996) and the Closure Plan Addendums of July 30, and September 9, 1996 (Fugro, July 30, and September 9, 1996). The Regional Water Quality Control Board-Los Angeles Region (RWQCB) approved the closure plan dated June 19 and addendum dated July 30, 1996, in a written letter to Dial dated August 8, 1996. The additional addendum was verbally approved by the RWQCB on September 19, 1996. The shallow soil sampling program was initiated in September 1996, during a site demolition program to investigate and "close" waste management units (WMUs) and aboveground storage tank (AGT) areas as they were removed during site demolition.

An interim closure assessment report was forwarded to the RWQCB on December 16, 1996, to present the majority of the closure program data gathered through October and to allow the RWQCB to review and approve an additional "post-closure" assessment program. The post-closure sampling program was proposed by Fugro (December 16, 1996) to assess additional areas of concern (AOC) and chemicals that were not previously identified by past assessment programs and to complete assessment in areas not fully delineated during the closure sampling program. To provide a basis for identification of the AOCs, analytical data from the closure sampling program were compared to the U.S. Environmental Protection Agency (U.S. EPA) Region IX, Preliminary Remediation Goals (PRGs), and calculations of screening level values as provided in the RWQCB "Interim Assessment and Site Cleanup Guidebook" (RWQCB, May 1996). The post-closure assessment program included drilling 16 exploratory soil borings to complete the lateral and vertical delineation of volatile organic compounds (VOCs), petroleum hydrocarbons, formaldehyde, methylene blue active substances (MBAS) and ammonia identified from closure sampling through October 1996. The RWQCB (December 24, 1996) approved the additional assessment program outlined in the interim closure assessment report with conditions that resulted in a 3-fold expansion of the proposed boring program. The post-closure sampling effort was initiated on February 6, and completed on February 25, 1997.

This final closure report expands upon and supersedes the previous interim submittal (Fugro, December 16, 1996), by presenting the post-closure data and the certified analytical laboratory reports and waste manifests derived from the closure sampling program. This report was prepared using generally accepted environmental consulting principles and practices within the limitations described in Appendix A.

EXECUTIVE SUMMARY

The Dial Corporation (Dial) facility at 9300 Rayo Avenue was used in the manufacturing of soap and bleach from the late 1920s until November 1991. Site assessment programs conducted from 1992 through 1994 identified chemicals of concern (COCs) in soil and groundwater that included petroleum hydrocarbons and halogenated volatile organic compounds (VOCs). The Regional Water Quality Control Board-Los Angeles Region (RWQCB) has provided oversight since 1995, pursuant to a voluntary oversight contract with Dial. Remedial action conducted during 1995 addressed gasoline- and VOC-impacted soils in the area of the old garage and laboratory. In 1996, the facility was demolished and all subsurface structures and piping were removed. A closure program for clarifiers, sumps, drains, aboveground tanks (AGTs) and underground storage tanks (USTs) was completed in October 1996. A post-closure assessment program was performed in February 1997, to assess additional areas of concern not previously identified and to complete assessment in areas not fully delineated during the closure program.

During the closure and post-closure programs, 251 soil samples were collected and analyzed for COCs. Inclusive of prior assessment programs, 468 soil samples have been analyzed. Three new groundwater monitoring wells were installed during the post-closure program, bringing the total number of wells onsite to 8. Seven groundwater sampling events have been performed since April 1992 to assess groundwater quality beneath the site.

The lateral and vertical extent of soil impacted by COCs has been delineated to numerical criteria established by the EPA and RWQCB for the protection of human health at industrial sites and shallow groundwater. Soil samples collected from closure and post-closure assessment programs did not contain residual COCs at concentrations in excess of criteria established by EPA to protect human health at industrial sites. Petroleum hydrocarbons in the C_{13} to C_{22} range and MBAS in shallow soil samples, collected less than 10 feet bgs, were the most frequently detected COCs at concentrations in excess of RWQCB screening level criteria. The groundwater sampling data does not suggest these COCs have significantly affected water quality beneath the site.

The largest area of petroleum-hydrocarbon-impacted soil (primarily dodecylbenzene) is present in the southeastern corner of the site to a depth of up to 30 feet bgs. A risk assessment showed no significant human health exposure, and that these petroleum hydrocarbons will not leach from the soil to the groundwater.

The lateral extent of groundwater impacted by benzene, toluene, ethylbenzene and xylenes (BTEX) has been delineated onsite. Since April 1992, the occurrence of BTEX and VOCs in the groundwater has remained relatively stable and has been in recent decline. In general, no VOC concentration reported was above numerical criteria protective of a drinking water resource. The distribution of VOCs in groundwater samples supports a prior hypothesis that groundwater has been impacted by an offsite source.

In consideration of data from closure and post-closure assessment programs, risk assessment and remedial actions, a "No Further Action" letter is requested of the RWQCB for the soils and groundwater at the subject site.

1.1 CLOSURE AND POST-CLOSURE PROGRAM OBJECTIVES

The objectives of the closure and post-closure programs were to delineate the nature and extent of constituents of concern (COC) identified from previous assessments, verify completion of remedial efforts to mitigate petroleum hydrocarbon- and VOC-impacted soil by soil vapor extraction (SVE) in the area of the old garage and laboratory, delineate the extent of petroleum hydrocarbon-impacted groundwater beneath the site, and investigate and close former WMUs (i.e., clarifiers, sumps and drains) and AGT areas (EMCON, July 1, 1996). As provided in the Closure Plan, and from comments and conditions given by the RWQCB, the following are target analytes in soil and groundwater:

- Total Petroleum Hydrocarbons (TPH [C4 to C23+ range]);
- Benzene Toluene, Xylenes and Ethylbenzene (BTEX);
- Volatile Organic Compounds (VOCs), specifically, 1,2-dichloroethane (1,2-DCA) and chloroform;
- Formaldehyde;
- Soil pH;
- Phosphate;
- Chloride;
- Ammonia;
- MBAS

In addition to the investigation of the above-listed COCs, the closure program also included removal of a former underground fuel storage tank (UST) that was closed in-place below the southwest corner of former Building 8, and excavation of soils impacted by an apparent release of acid in the area of Building 8.

1.2 CLOSURE AND POST-CLOSURE PROGRAM SCOPE

The following activities were conducted to achieve the objectives of the closure program at the site:

- Sixty-two soil samples were collected with an excavator or backhoe for the closure of clarifiers, sumps and drains;
- Sixty-nine soil samples were collected using test pits or a hand auger to support the closure of former USTs, AGT areas and other AOCs, such as drum storage areas, oil storage areas and stained concrete;
- Three exploratory soil borings were drilled, and 36 soil samples were collected, to assess and verify completion of soil vapor extraction (SVE) and the mitigation of petroleum and VOC-impacted soil in the old garage and laboratory area;

- Sixteen exploratory soil borings were drilled, and 84 soil samples were collected, as part of post-closure assessment activity to assess previously unidentified AOCs, and the lateral and vertical extent of COCs below former WMUs and AGT areas. Two borings were drilled to gather data on the physical soil characteristics to support the risk assessment in area of dodecylbenzene-impacted soils;
- Three groundwater monitoring wells were installed on the site to assess the lateral extent of aromatic petroleum hydrocarbons identified from previous assessment activity.

An estimated 120 cubic yards (cy) of soil, generated as part of remedial excavations and closure of sumps and clarifiers were removed during the closure program and then transported to the TPS Technologies Soil Recycling facility in Adelanto, California.

2.0 BACKGROUND

The following summarizes the site history and results of previous assessment programs. Details and analytical data for Pre-Closure Assessment and Remedial Action Programs discussed below can be found in the following reports:

- Phase I Incorporated November 26, 1991, Phase I Environmental Assessment;
- EMCON, August 5, 1992, Phase II and III Subsurface Assessment Report;
- EMCON, April 9, 1993, Phase IV Site Assessment Report;
- EMCON, July 9, 1993, Analysis of Dodecylbenzene-Impacted Soil;
- EMCON, July 12, 1993, Soil Vapor Extraction Test Report (Old Garage and Laboratory);
- EMCON, January 1994, Dodecylbenzene Health Risk Assessment;
- EMCON, November 7, 1995, Offsite Well Research;
- EMCON, February 23, 1996, Remediation Progress Update (December 1995);
- EMCON, May 2, 1996, City of South Gate Municipal Supply Wells Near the Dial Corporation Main Facility and South Parking Lot Sites;
- EMCON June 13, 1996, First Quarter, 1996 Progress Report
- EMCON, February 10, 1997, Dodecylbenzene Health Risk Assessment Addendum.

2.1 SITE LOCATION AND HISTORY

The property at 9300 Rayo Avenue is located in the City of South Gate and has been used in the manufacturing of soap and bleach products from the late 1920s until November 1991. The site was operated by the Purex Corporation through the mid-1980s, and thereafter, until operations were terminated in late 1991 by Dial. The site is bordered by industrial properties to the north and west and by a Los Angeles County Department of Water and Power easement to the south, and the Los Angeles River to the east (Figure 1). Information on the historical contents of the USTs and AGT, and the processes conducted in the building, is shown on Plates 1 through 3.

Site demolition operations performed by The Environmental Group (TEG), began in April and were concluded in November 1996. Asbestos containing materials were removed beginning in April, prior to building demolition and as discovered during demolition operations. Building structures, subsurface piping, WMUs, AGTs and foundations were excavated and removed. All

demolition materials were hauled offsite or sold as scrap. Concrete was excavated, steel rebar removed and crushed for use as backfill for foundation and underground structure excavations, and to provide additional borrow materials for grading operations. The site was graded roughly flat.

2.2 HYDROGEOLOGIC SETTING

The site is located within the Central Groundwater Basin of the Los Angeles Coastal Plain. The Central Basin is located northeast of the Newport-Inglewood Uplift, and is bounded by the Santa Monica Groundwater Basin on the west, the Hollywood Basin on the north, the Elysian Park-Repetto Hills on the northeast, and the Los Angeles-Orange County line on the southeast (DWR Bulletin 104, 1961).

2.2.1 Regional Hydrogeology

Named aquifers within the Basin below the site include the Exposition and Gage Aquifers within upper Pleistocene Lakewood Formation and the Lynwood, Silverado, and Sunnyside Aquifers of the lower Pleistocene San Pedro Formation (DWR Bulletin 104, 1961). The Bellflower Aquiclude, a mixture of fine-grained and sandy sediments within the Holocene Age alluvial deposits, is reported from the surface to a depth of approximately 70 to 80 feet below the ground surface (bgs) above the Exposition Aquifer. Water-bearing alluvial sediments above the Bellflower Aquiclude are assigned to the Semiperched Aquifer throughout the Central Groundwater Basin (DWR, Bulletin 104, 1961).

Data published by the Los Angeles County Department of Public Works indicates that regionally extensive groundwater beneath the site occurs at an elevation of approximately 10 feet above mean seal level in the Fall of 1988 (LACDPW, April 1988). Groundwater at this depth is contained within the Exposition Aquifer that is reported at an elevation of between 20 to 60 feet in the vicinity of the subject site (DWR Bulletin 104, 1961, Plates 10A and 11A). Based on a site elevation of approximately 105 feet above mean sea level, the corresponding depth to recognized regionally extensive groundwater within the Exposition Aquifer would be 95 feet bgs. Since monitoring began in April 1992, groundwater has been measured at depths of between 45 and 52 feet bgs, and flows to the south-southwest generally consistent with the southward course of the Los Angeles River.

The closest municipal well to the site, City of South Gate well #23 (State Well No. 3S/12W-06/03), is located approximately 1,000 feet south and downgradient of the former facility (Figure 1). This well was installed in 1953 to a total depth of 856 feet bgs and is perforated below 530 feet bgs in the Silverado Aquifer. The well was not installed with filter pack, and the seal reportedly extends from the surface to a depth of approximately 50 feet bgs. Several other municipal supply wells

located to the east and southwest are completed within the Silverado Aquifer. Several of the these wells have been closed by the City of South Gate due to Perchloroethylene (PCE) impacts above state maximum contaminant levels. Volatile organic compounds have not been reported in well #23 downgradient of the site.

2.2.2 Site Soil Stratigraphy

The soil stratigraphy beneath the site varies locally, but can be divided generally into four zones above and below the water table to the total depth explored. Within the upper 20 to 30 feet of the soil column the soils are generally comprised of interlayered silty sand, silt and clay. The percentage of silt and clay in the upper zone is generally higher in the southwestern portion of the property within the upper zone to a depth of approximately 25 feet bgs. In the southwestern portion of the site clayey soils tend to be more plastic when encountered in the upper 5 to 10 feet of the soil profile. Vertical hydraulic conductivity was measured in two soil samples collected from borings EB-2 and EB-3, that were drilled in support of the risk assessment in the area of alkylate unloading sump (Plate 2). The soil samples collected from these two borings at a depth of 25 feet bgs, from a sandy clay interval, contained vertical hydraulic conductivities of 1.79 and 1.87 E-07 cm/sec.

Below the upper zone from depths of 30 to 35 and 40 feet bgs, is a uniformly sandy and silty sand interval. The zone varies in thickness locally and is comprised of poorly-grade, fine-grained sand and silty sand. Underlying this sandy interval is another zone of clay and silt that is present to a depth of up to 50 feet bgs. This interval has local silty sand interbeds, but is generally comprised of silt and clay.

The fourth zone encountered beneath the site comprises the majority of the saturated sediments and uniformly is characterized by silty and sandy soils to the total depth explored of 75 feet bgs. Although the upper 5 feet of the saturated zone is contained within the clayey and silty soils at depths of 45 feet bgs, the majority of the water-bearing sediments are contained within sandy and silty sand soils.

2.2.3 Groundwater Occurrence and Flow

Groundwater beneath the site was measured during the post-closure sampling program at depths of between 44.21 and 47.89 feet bgs. The depth to first-encountered groundwater beneath the site has risen approximately 8 feet since monitoring began in April 1992 (Table 1). Based on the water level measurements collected in February 1997, groundwater flows to the south-southwest at a gradient of 0.002 foot/foot (Figure 2). The piezometric surface from measurements collected in February 1997, shows a trough in the area of wells MW-6 and MW-7 in the central portion of the site. This flow direction and piezometric surface differ slightly from past measurements where

the groundwater flow was generally parallel to the adjacent Los Angeles River. The groundwater flow direction is not generally different from the regional groundwater flow direction reported by the LACFCD (April 1988). Water-bearing sediments at this depth would be contained within the Bellflower Aquiclude (DWR Bulletin 104, 1961). Although normally contained above the Bellflower Aquiclude, these water-bearing soils could be assigned to the Semiperched Aquifer.

2.3 PREVIOUS ASSESSMENT PROGRAMS

A Phase I Environmental Site Assessment (ESA) was completed in November 1991, following closure of the Site (Phase One, November 26, 1991). Seven former USTs were identified by the ESA as closed prior to 1983 by Purex. One UST was closed in-place below the southwestern corner of Building 8. Eighty-seven (87) AGTs and their contents, former concrete tanks and buildings demolished prior to 1991 were also identified from the ESA. Additional assessment and review of historical data during subsequent assessment and the closure program added information on the tank contents. Based on the results of the ESA, several phases of site assessment were initiated and completed beginning in April 1992 and ending in April 1993 (EMCON, August 5, 1992; EMCON, April 9, 1993).

A total of 59 exploratory soil borings were drilled to depths between 3 and 76 feet below the ground surface (bgs), and seven groundwater monitoring wells, MW-1 through MW-7, were installed on and off the subject site (Plate 1). Pre-Closure exploratory soil borings were grouped by their total depth drilled into shallow (less than 3 feet), middle (to 15 feet), and deep (greater than 50 feet), to investigate stained areas, sumps and clarifiers, USTs and AGT areas. During the Phase II, III and IV assessment programs a total of 217 soil samples were selectively tested for the following suite of analytes (Tables 2 and 3):

- TPH
- BTEX
- VOCs
- Formaldehyde
- Polychlorinated Biphenyls
- pH
- Title 22 Metals
- Total Chromium
- Phosphates
- Chloride
- Phenols

As part of the initial site assessment program, groundwater samples were collected in April 1992 from wells MW-1, MW-2, MW-3, MW-4, and MW-5. VOCs, including trichloroethylene (TCE), were reported in water samples collected from wells MW-3, MW-4 and MW-5, in April 1992 at concentrations higher than those reported in onsite wells. Subsequently, semiannual groundwater sampling was suspended in these wells, because initial sampling results indicated an offsite source of VOCs (EMCON, November 7, 1995; EMCON, June 13, 1996).

Semiannual sampling of wells MW-1, MW-2, MW-6 and MW-7 began in September 1992 (Table 1). BTEX, and a variety of halogenated VOCs, including chloroform, 1,2-DCA, 1,2-dichloroethane (1,1-DCA), 1,2-dichloropropane (1,2-DCP) and TCE have been reported at low concentrations in groundwater samples collected from wells MW-6 and MW-7. Benzene has been reported at concentrations ranging from 5.8 to 230 µg/l in groundwater samples collected from wells MW-6 and MW-7. VOC concentrations in these wells have ranged from 0.5 to 89 µg/l, with the majority of the concentrations in the groundwater samples collected since 1992, being below respective State Maximum Contaminant Levels (MCLs).

Soil samples were collected adjacent to former waste management units, USTs, AGTs and AOCs identified in the ESA. The results of the Phase II through Phase IV site assessments identified the following AOCs and the associated COCs (Plate 1):

- Alkylate Unloading Sump (dodecylbenzene, TPH C18-C22);
- Building 8 Fuel Storage Tank (TPH Fuel Oil Range);
- Old Garage and Laboratory Storage Tanks (TPH Gasoline Range, BTEX, Chloroform, 1,2-DCA).

Subsequent assessments were conducted to assess the feasibility of remedial alternatives for remediation of dodecylbenzene- and petroleum hydrocarbon- and VOC-impacted soils in the alkylate unloading area and old garage and laboratory (EMCON, July 12, 1993). Soil vapor extraction (SVE) was selected as the preferred remedial alternative for mitigation of petroleum and VOC-impacted soils in the area of the old garage and laboratory (EMCON, July 12, 1993). Risk assessment modeling was performed to evaluate the risk of dodecylbenzene on human health and the environment in the area of the former alkylate unloading sump. LUFT risk assessment was similarly used to assess the qualitative risks to groundwater from petroleum-hydrocarbon impacted soils in the area of the Building 8 UST.

2.4 SOIL VAPOR EXTRACTION: OLD GARAGE AND LABORATORY

Seven nested vapor extraction wells were installed in the area of petroleum hydrocarbon- and VOC-impacted soil in the vicinity of the old garage and laboratory USTs (Plate 1). A long-term pilot program was performed from September to November 1993 to assess the feasibility of vapor extraction in removing VOCs and aromatic petroleum hydrocarbons from the soil. The full-scale SVE, operated from January through December 1995 (EMCON, February 23, 1996). During that time the SVE system operated for a total of 7,097 hours. Inclusive of the pilot testing program, approximately 34,000 pounds of volatile petroleum hydrocarbons were removed. Influent concentrations ranged from 36,000 parts per million by volume (ppmv) recorded during the pilot program to 470 ppmv in November 1995. Benzene concentrations declined rapidly in the influent

samples collected over the initial three month period of operations from 52 ppmv in early February 1995 and was not reported above practical quantitation limits in the samples collected in October and November 1995 (EMCON, February 23, 1996). An in situ-respirometer test conducted after SVE shutdown indicated that natural attenuation of residual petroleum hydrocarbons was occurring in the presence of atmospheric oxygen induced into the subsurface by the SVE system (EMCON, February 10, 1996).

2.5 DODECYLBENZENE HEALTH RISK ASSESSMENT

A human health risk assessment was performed by EMCON using the seasonal soil compartmental model (SESOIL) to evaluate potential risks associated with dodecylbenzene-impacted soils in alkylate unloading area (EMCON, January 1994). The results of this risk assessment indicated that there are no significant human health impacts expected to result from exposure of onsite workers to dodecylbenzene-impacted soils. In response to comments made by the RWQCB (February 13, 1996), the dodecylbenzene health risk assessment was amended using quantitative structure activity approach (EMCON, June 5, 1997). The RWQCB did not object to implementation of the structure activity program, imposing additional conditions that included using the 95% upper confidence limit as a soil source concentration, a sensitivity analysis and toxicity analysis of dodecylbenzene breakdown products (RWQCB, August 16, 1996). Using this approach and site-specific physical soil data for bulk density, porosity, moisture content and vertical permeability, the SESOIL fate and transport modeling and toxicological data were refined and evaluated for a period of 99 years. The results of the amended risk assessment concluded that dodecylbenzene was not expected to leach to the groundwater and that exposure through volatilization and other exposure pathways are below levels of concern or generally accepted guidelines established by regulatory agencies (EMCON, February 10, 1997).

2.6 CLOSURE AND POST-CLOSURE PROGRAMS

Although several phases of site assessment and remedial activity were conducted through 1994, regulatory oversight had not been established by June 1995. In July 1995, Dial entered into a voluntary oversight contract with the RWQCB (RWQCB, July 1995). Subsequently, the RWQCB reviewed previous site assessment and remedial progress data collected through August 1995, and provided comments for further assessment and closure conditions for the site to Dial on February 13, 1996. A response to the conditions and discussions regarding a closure strategy and amendment of the dodecylbenzene health risk assessment were provided to the RWQCB (EMCON, May 20, 1996). A closure plan for the site was forwarded to the RWQCB on July 1, 1996, and was subsequently approved by the RWQCB with conditions on August 8, 1996. Several closure plan addendums and interim remedial action plans were provided to the RWQCB to address previously unknown site conditions, and the need for removal actions (Fugro, July 30, 1996; Fugro, September 9, 1996). The addendum outlined additional sampling in the area of the

brine tank, Sump ZZ, and stained soils discovered during demolition and foundation removal actions. Removal action procedures and analytical programs were also specified for the Building 8 UST closure and the removal of discolored and apparently impacted soils in the area of the acid containment area west of Building 8 and Sump ZX in Building 8 (Plate 2).

An interim closure assessment report was forwarded to the RWQCB on December 16, 1996, for the purpose of presenting the closure program data gathered through October 1996 and to allow the RWQCB to review and approve an additional "post-closure" assessment program for inclusion in the remaining portion of the sampling effort. The post-closure sampling program was proposed by Fugro (December 16, 1996) to assess AOCs that were not previously identified by past assessment programs, and to complete assessment in areas not fully delineated during the closure sampling program. The post-closure sampling program included:

- An expansion of the analyte suite for groundwater samples collected from onsite monitoring wells to include MBAS, ammonia and formaldehyde;
- Five additional shallow exploratory soil borings (EB-14 though EB-18) to assess the lateral and vertical extent of MBAS, ammonia and formaldehyde identified from closure samples collected in AGT Area V (Plate 3);
- Six additional soil borings (EB-4 through EB-7 and EB-12 and EB-13) in the area of hand auger borings HA-2 and HA-7 to delineate the lateral and vertical extent of elevated concentrations of petroleum hydrocarbons in soil samples collected at depths of 3 and 5 feet bgs, respectively (Plate 3);
- Four additional borings (EB-8 through EB-11) in the area of the Building 14 clarifier to assess the lateral extent of chloroform and methylene chloride identified in closure samples Q-E and Q-W (Plate 3); and
- Relocation of closure exploratory soil boring EB-1 to assess the vertical extent of 1,2,4 and 1,3,5 trimethylbenzene (TMB) identified in closure sample R-1 (Plate 3).
- Drilling of exploratory borings E-B-2 and EB-3 to provide data on the physical characteristics of the soil above the water table in support of risk assessment and SESOIL modeling.

A total of 120 soil samples and 8 groundwater samples were collected as part of the post-closure assessment program.

3.0 CLOSURE AND POST-CLOSURE PROGRAM AND PROCEDURES

3.1 CLOSURE PROGRAM

The closure sampling program was initiated on September 9, and was completed on October 24, 1996. During that period, 131 soil samples were collected below sumps, drains, clarifiers, USTs and eight AGT areas (Plate 2). Of the total number of samples collected, 16 were analyzed to characterize the stockpiled materials generated by the remedial excavations for disposal. Including the previous assessment programs, a total of soil samples were collected at the completion of the closure sampling program (Tables 2 and 3).

The soil samples were collected at depths between approximately 3 and 16 feet bgs beneath the sumps, drains, clarifiers, underground and aboveground tanks identified for closure on Plate 2. Soil samples were collected using either a hand auger (HA-1 through HA-10) or with the aid of the bucket of an excavator. Procedures of excavation and hand auger sampling are provided below. Soil samples were selected for chemical analysis consistent with the closure sampling schedule (Tables 2 and 3) in accordance with U.S. EPA methods for the following:

Analyte	Method
TPH (C_4 to C_{23+} range)	U.S. EPA method, modified 8015(ff)
BTEX	U.S. EPA method 8020
VOCs	U.S. EPA method 8260
Formaldehyde	U.S. EPA method 8315
pH	U.S. EPA method 9045
Phosphate	U.S. EPA method 365.2m
Chloride	U.S. EPA method 300.1
Ammonia	U.S. EPA method 350.2m
MBAS	U.S. EPA method 425.1m

Consistent with a RWQCB request made in the field September 4, soil samples O-M and O-SE collected below the sump south of the AGT area east of former Building 8 were analyzed for PCBs by U.S. EPA method 8080. Soil sample locations were tied to surveyed WMUs, AGT areas and building locations.

3.1.1 Excavation Sampling Procedures

Excavation samples were collected either by driving a brass or stainless steel sample tube directly into freshly uncovered soil within the excavation bottom or sidewalls, or into soil contained in the backhoe bucket. If collected from the backhoe bucket, a representative and undisturbed portion of soil within the bucket was selected, and a sample steel tube was driven into the soil using a hard rubber mallet. If collected from the excavation, the sample ring was driven into undisturbed soil using a hard rubber mallet. The sample tube was then removed and the ends were covered with Teflon sheeting and sealed with plastic end caps.

Samples were labeled, documented in the chain-of-custody record, and placed in a cooler with ice at approximately 4°C prior to laboratory analysis. Selected samples were delivered to a state-certified laboratory for analysis of selected analytes. Samples not selected for immediate analysis were transported in a cooler with ice and archived in a frostless refrigerator at approximately 4°C for possible future testing. Prior to use, the sampler and sampling tubes were thoroughly cleaned. Sampling equipment was brush-scrubbed in a Liquinox and potable water solution and rinsed twice in clean potable or deionized water.

Chain-of-custody protocol was followed for all soil samples selected for laboratory analysis. The chain-of-custody forms accompanied the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to analysis.

3.1.2 Hand Auger Sampling Procedures

Each of the 10 hand auger borings (HA-1 through HA-10) were drilled using a 3-inch-diameter earth auger attached to a 3-foot-long T-bar that was operated manually. Soil samples were collected using a sampling device consisting of a steel penetration shoe attached to a 0.75-inch diameter steel rod and sliding hammer. The shoe was equipped with a brass sample retention liner approximately 4 inches long and 2 inches in diameter. To collect samples, the shoe and the liner were driven with the sliding hammer into the undisturbed soil at the bottom of the borehole. After the sampler was driven approximately 4 inches, the shoe was removed from the boring and the sample liner was removed from the shoe and sealed on both ends with Teflon tape and plastic end caps. The samples were retained for laboratory analysis. The hand auger and sampling equipment was washed and brush scrubbed in a Liquinox and potable water solution, and rinsed twice with deionized or potable water prior to each sampling episode. Upon completion of the sampling, each boring was backfilled with excavated soils.

3.2 CLOSURE PROGRAM REMOVAL ACTIONS

Removal of the former Building 8 fuel oil tank and excavation of yellow and white-stained soil, suggestive of low pH conditions, consistent with the workplan addendum of September 9, 1996, was completed by mid-October 1996. Following receipt of the closure permit, the Building 8 UST was excavated and removed in mid-October 1996. Six soil samples were collected from the bucket of an excavator at depths of between 8 and 12 feet bgs below the tank and along the excavation sidewalls for analysis of TPH and BTEX consistent with the above-described methods (Figure 3, Table 3). A mixture of sand and cement used to fill the tank for in-place closure was removed, along with excavated soil generated to expose the tank for closure sampling. Excavated soils were transported as nonhazardous waste to the TPS Technologies Soil Recycling Facility, Adelanto, California (Appendix D).

Consistent with the September 9 workplan for removal of yellow- and white-stained soils below the former acid tank pit east of Building 8 (B-1 through B-4 and S-1 through S-5) and under sump ZX (ZX-1 through ZX-4) in the central portion of Building 8, 13 soil samples were collected to confirm the limits of the remedial (Figure 6; Tables 2 and 3). The soil samples were collected using excavation equipment and the procedures described above and analyzed for pH using EPA method 150.1 (Table 2 and 3). Based on the results of stockpile samples, soil removed from the acid-containment area and sump ZX excavations was sampled and later used to backfill these excavations.

Excavated soil generated from removal of the brine tank, Building 14 Clarifier, AGT Area V sampling and excavation, and removal of the alkylate unloading sump was characterized using closure samples and samples collected from stockpiled materials. Thirteen soil samples were collected from these excavation stockpiles and analyzed for selected COCs using the above-described methods (Tables 2 and 3). Including the soil generated from excavation of the Building 8 tank, an estimated 153 tons (120 cubic yards) of soil was transported as nonhazardous waste to TPS technologies for recycling. Manifests for soil removed by TEG to the TPS facility are provided in Appendix D.

3.3 POST-CLOSURE ASSESSMENT

The post-closure assessment program included drilling 18 exploratory soil borings EB-1 through EB-18 to complete the lateral and vertical delineation of AOCs and COCs that were not previously identified by past assessment programs, and address data gaps from the closure sampling program conducted in September and October 1996. The post-closure sampling effort was initiated on February 6 and completed on February 25, 1997. Soil sampling was done using Geoprobe Equipment described below for post-closure borings EB-1, EB-4 through EB-18 (Plate 3). One hundred and twenty (120) soil samples were collected from these borings for analysis of

VOCs, petroleum hydrocarbons, formaldehyde, MBAS and ammonia by the analytical methods described under section 3.1 (Table 4). Exploratory borings EB-2 and EB-3 were drilled using hollow-stem-auger drilling equipment. In addition to the EB borings, monitoring wells MW-11, MW-12 and MW-13 were installed during the post-closure program using hollow-stem-auger drilling equipment. The new wells and monitoring wells MW-1, MW-2, MW-3, MW-6 and MW-7 were developed to remove sediment accumulated from demolition operations, and sampled consistent with the procedures described below.

3.3.1 Geoprobe Sampling Procedures

Soil samples from post-closure soil boring EB-1, EB-4 through EB-18 were collected using the Geoprobe® system provided by Vironex Field Services (Vironex), of Los Angeles, California. The Geoprobe® system consists of a hydraulic ram and hammer unit that drives a 1.5 inch-diameter probe into the soil and is advanced by adding 4-foot-long, threaded, hollow drill rods. Connected to the end of the lead drill rod was a 1.5-inch-diameter, 24-inch-long stainless steel soil sampler fitted with four precleaned 6-inch-long by 1-inch-diameter brass or stainless steel sleeves. At each 5-foot-depth interval, the soil sampler assembly was driven 24 inches into undisturbed soil. The field geologist classified soils from the drill holes based on lithology screening, consistent with the Unified Soil Classification System (ASTM C2487-94).

Soil samples retained for analysis were sealed with Teflon® sheets and plastic end caps. The labeled sleeves were then sealed in a plastic bag and placed in an insulated cooler refrigerated using ice packs. Chain-of-custody records were prepared to document sample handling information. Soil samplers and sampling attachments were cleaned and brush-scrubbed with a Liquinox and potable water solution followed by two successive rinses with deionized or potable water prior to collecting each sample. All open drill holes were backfilled with bentonite.

All soil samples collected were screened with a PID for the presence of VOCs using headspace analysis. Headspace analyses were conducted using a portion of the soil from the lower sleeve that was placed into a sealable plastic baggy. The soil vapors were allowed to equilibrate in the bag for at least 15 minutes. The jar was then be opened and the sampling inlet of an organic vapor analyzer or PID was inserted to measure VOC concentrations in the bag headspace. The PID was equipped with a 10.6eV lamp to detect the widest range of VOCs. The results of the field screening are presented on the boring log (Appendix E).

3.3.2 Hollow-Stem-Auger Borings and Wells

The groundwater monitoring well borings and borings EB-2 and EB-3 were drilled using a truck-mounted, high-torque, hollow-stem-auger drilling rig (CME-75). Continuous flight augers measuring approximately 10 inches in diameter, were used to advance each borehole to a target depth of between approximately 45 and 70 feet bgs. Before sampling, all equipment that came into contact with potentially impacted soil was cleaned as described above. The drill rig equipment and drill tools were steam cleaned before use and after each borehole completion.

Undisturbed soil samples were collected at 5-foot-depth intervals to the total depth of each boring. At each 5-foot-depth interval, a 1.5-foot-long, 2-½-inch-diameter, split-tube type drive sampler was advanced 1.5 feet ahead of the lead flight auger. The sampler was driven with a standard penetration test detailed in ASTM D1586 (using a 140-pound hammer with a 30-inch drop). The number of blows required to advance the sampler each 6-inch interval was recorded on a boring log. The field geologist prepared lithologic descriptions of the soils encountered (based on examination of auger cuttings and the soil samples) using the Unified Soil Classification System (ASTM C2487-94). Soil samples were collected for analysis of physical soil characteristics in borings EB-2 and EB-3. Soil samples from these borings were selectively analyzed for the following:

Analyte	Method
Total Organic Carbon	U.S. EPA 9060
Total and Dry Density with Moisture Content	ASTM D2937
Vertical Permeability	ASTM 5084

Installation of Groundwater Monitoring Wells. Three four-inch-diameter Schedule 40 PVC groundwater monitoring wells were installed within the subject site as describe in the EMCON Closure Plan (July 1, 1996). The well was constructed of 0.020 slotted, "high flow" PVC, screen set at depths of between approximately 30 to 70 feet bgs. Filter pack consisting of No. 3 Lone Star Sand was placed across and slightly above the screen interval. The wells were surged following placement of the filter pack to allow for settlement. Additional sand was added as needed to bring the sand slightly above the screen section. A bentonite seal, consisting of bentonite chips hydrated at 1-foot intervals was placed above the filter pack to within 2 feet of the surface. A PVC slip cover was place on the top of each well and the well head was secured within a 14-inch diameter steel riser pipe. Well permits for each well were obtained from the County of Los Angeles Department of Health Services prior to installation. The well head elevations and locations were surveyed by a California-licensed surveyor relative to mean-sea level.

Monitoring Well Development. The monitoring wells were developed following installation to restore the natural hydraulic conductivity of the formation surrounding the well, remove sediments from the well casing and formation and stabilize the filter pack. Groundwater level measurements were recorded prior to development and each well was developed using a 3/4 inch diameter bailer and surge block. During the development, the water was contained in DOT drums and monitored for pH, temperature and specific conductivity as well as total settleable solids (TSS). Development continued until TSS concentrations were below 1 part per thousand by volume measure by an Imhoff Cone.

Groundwater Sampling. A groundwater sample was collected from each of the newly installed groundwater monitoring wells and wells MW-1, MW-2, MW-3, MW-6, and MW-7 on February 24 and 25, 1997. Prior to collecting a groundwater sample, the depth to water and well depth in the well was measured using an electronic sounder. Using a submersible pump the well was purged a minimum of three casing volumes of water. During pumping, the water was monitored for temperature, pH, and specific conductance to assess if formation water has entered the well. A minimum of three measurements was collected within the calculated purge volume. Field data sheets documenting purging operations are presented in Appendix E. Groundwater wells were sampled in order of historically lowest benzene concentration to historically highest benzene concentration to minimize the risk of cross-contamination during the sampling program.

When the above-described parameters stabilized, the well was allowed to recover to almost static conditions and sampled. The groundwater sample was collected using a disposable Teflon bailer attached to a braided nylon line. The bailer and line was discarded after sampling was completed. The groundwater samples were collected and placed into 40 ml VOA containers supplied by the State-certified analytical laboratory. The VOA containers were labeled and placed into ice-cooled, insulated containers for transportation to the laboratory, along with appropriate chain-of-custody documentation. Low yield wells (wells MW-12 and MW-13), that did not produce the calculated purge volume within one hour of their recovery and did not exceed 80 percent of static within 2 hours, were purged to dryness and sampled as enough water was available.

Groundwater samples were collected and analyzed for the following:

Analyte	Method
Volatile Organic Compounds	U.S. EPA Method 8260A
Total Petroleum Hydrocarbons	U.S. EPA Method 8015M
Formaldehyde	U.S. EPA Method 8315
pH	U.S. EPA Method 150.1
Chloride	U.S. EPA Method 300.0
Ammonia	U.S. EPA Method 353.3
MBAS	U.S. EPA Method 425.1

Equipment that came into contact or that was used to collect the groundwater sample was steam-cleaned and rinsed with deionized water. Because a disposal bailer was used in the sampling of the well, an equipment blank of the purging equipment was collected prior to purging the final well. The equipment blank of deionized water was collected from the final rinsing to the pump. Additionally, a trip blank was prepared prior to the sampling effort, to accompany the samples within the insulated container upon collection and to final delivery to the laboratory. The equipment and trip blanks were analyzed for VOCs by U.S. EPA method 8260.

3.4 DATA EVALUATION METHODS

To evaluate closure and post-closure data, the analytical results were compared to published screening level guidance established to protect human health and groundwater. U.S. EPA Region IX, PRGs (September 1, 1995) for industrial soils and screening level values derived using the attenuation factor method described in the RWQCB May 1996, "Interim Assessment and Site Cleanup" Guidebook were used to evaluate the closure and post-closure analytical data.

The U.S. EPA (September 1, 1995), Region IX PRGs combines current U.S. EPA toxicity values with "standard" exposure pathways to estimate concentrations of COCs in the environmental media (i.e., soil, groundwater and air) that are protective of humans, including sensitive receptors. The PRG levels correspond to either one-in-one million (10^{-6}) cancer risk or a noncarcinogenic hazard quotient of one, whichever yields the most conservative screening value. According to the U.S. EPA Region IX, PRGs can be used to screen COCs in the environmental media and trigger further investigation. Because the future land use will be industrial property, industrial soil PRGs were compared with closure and post-closure data.

The screening level guidance established by the RWQCB (May 1996) is based on attenuation of the COCs in the soil media and their vertical separation (distance) above a groundwater resource. To establish a screening level estimate, the retention and transportation of volatile and petroleum

compounds through the soil media and their separation from the water table and the beneficial use of the groundwater is considered. A screening level estimate for VOCs and chloride, formaldehyde, ammonia and MBAS was derived by multiplying the State of California Maximum Contaminant Level (MCL) for a COC by its attenuation factor, which is based on the lithologic makeup of the soil column and the vertical distance separating the COCs from the water table. Screening level values for hydrocarbons and BTEX compounds were derived from interpolation of prescribed RWQCB values contained in Table 4-1 of the guidance document, "Maximum Screening Levels (mg/kg) for TPH and BTEX Above Drinking Water Aquifers." Table 5-1, "Average Attenuation Factors for Different Distances Above Groundwater and Lithology" and the methods described in the RWQCB May 1996 document were used to establish the screening levels for the COCs and are presented in Table 5.

The screening level estimates were calculated using a depth to groundwater of 45 feet bgs. In calculating the attenuation factor, the soil makeup separating the COCs and the groundwater was interpreted to be 50 percent sand and 50 percent clay. Linear interpolation of the published criteria on RWQCB Tables 4-1 and 5-1 were used to establish attenuation factors and subsequently the screening level estimates. Screening level estimates were provided for those VOCs or other COCs that were reported above practical quantitation limits (PQLs) by the laboratory in more than one soil sample collected during the closure and post-closure sampling.

A detailed presentation of the calculations and assumptions used to establish screening levels is provided in Appendix F.

The 1,2,4- and 1,3,5-trimethybenzene (TMB) have no published toxicity information, state or federal MCL or PRG to calculate a screening level value. The MCL for xylenes of 1.75 µg/l was used as an approximation in the screening level calculations for TMB. This value was selected because of the molecular similarities between TMB and xylenes, and the assumed similar structure activity. Similarly, naphthalene has no published state or federal MCL or PRG from which to obtain a screening level value. In this case, an EPA suggested no adverse response level (SNARL) value, established by the EPA (March 1986, September 1987) for naphthalene of 20 µg/l, was used to provide screening level guidance. A SNARL advisory is considered guidance and is not enforceable as a drinking water standard. The values are subject to change and represent contaminant levels where there is no appreciable risk. Thus, the screening level derived for naphthalene represent lower-bound conservative estimates.

4.0 CLOSURE PROGRAM RESULTS

The closure program results are provided on Tables 6 and 7, and are shown on Figures 3 through 8. Certified analytical laboratory reports and Chain-of-Custody documentation are provided in Appendix B.

4.1 PETROLEUM HYDROCARBONS

Sixty-seven (67) soil samples were collected beneath selected USTs, AGT areas, clarifiers, sumps and drains for analysis of petroleum hydrocarbon content by U.S. EPA method 8015(ff) (Figure 3). Hydrocarbons in the C_{13} to C_{22} range were the most frequently reported in the soil samples analyzed at concentrations that ranged from near the practical quantitation limit (PQL) of 0.5 mg/kg to 3,200 mg/kg (Tables 6 and 7). Concentrations in excess of the screening level value of 1,000 mg/kg were reported in soil samples HA-7 and HA-2, collected at depths of 5 and 3 feet below the former alkane tank near the storm water retention area and the oil storage area within former Building 6, respectively (Figure 2). Gasoline range (C_4 to C_{12}) hydrocarbons were not reported in any soil samples collected at a TPH concentration above 1.8 mg/kg, and with the exception of the sample from HA-2, "high boiling point" hydrocarbons (C_{23+}) were not reported above 210 mg/kg in the closure samples analyzed.

The petroleum hydrocarbons reported in the C_{13} to C_{22} range are consistent with the reported range for alkane oil and dodecylbenzene. Hydrocarbon concentrations greater than 100 mg/kg were generally reported in soil samples collected in the area of the alkylate unloading sump (Clarifier samples S and SW) and below the stormwater retention area (AGT Area VIII), where known impacts have been identified by previous assessments (Figure 3). Additionally, elevated C_{13} to C_{22} range hydrocarbons concentrations were reported in one soil sample (AV-A) in AGT Area V and in one soil sample (AIV-C) in Building 8 where alkane (or alkylate) oils were stored or used in the manufacturing process.

The hydrocarbons identified from samples collected in Building 8 (AIV-C) and AGT Area V (AV-A) appear to be a localized release through a former sump or drain into the subsurface. The petroleum hydrocarbons identified in soil samples collected below the stormwater retention area (AGT Area VIII samples) and clarifier appear to be related to alkylate-impacted soils identified from previous investigations of the unloading sump or could possibly be related to a release from the piping leading from the unloading sump to the alkane tank. All these samples collected at depths of between 3 and 5 foot bgs are below the screening level criteria of 1,000 mg/kg for C_{13} to C_{22} range petroleum hydrocarbons.

Two soil samples (HA-2 and HA-7) collected at a depth of 3 and 5 feet bgs exceed the screening level criteria for petroleum hydrocarbons in this hydrocarbon range. The vertical extent of hydrocarbons at concentrations above the criteria was not delineated in the area of samples HA-2 and HA-7. Additional post-closure sampling was proposed to assess the lateral and vertical extent of petroleum hydrocarbons identified in these borings.

4.2 PETROLEUM AROMATIC COMPOUNDS

A total of 15 soil samples were collected and analyzed for BTEX compounds below the former Building 8 tank, former 100-gallon gasoline storage tank and the storm-water retention area (Plate 2). With the exception of the west side wall sample collected for closure of the Building 8 tank, no BTEX compounds were reported above laboratory practical quantitation limits. The "west" sidewall sample collected at a depth of 10 feet bgs from the Building 8 tank excavation contained a total xylenes concentration of 0.017 mg/kg. No soil samples were collected that contained BTEX concentrations above the screening level estimates or PRGs (Tables 6 and 7). With the exception of the additional sampling required for closure of the SVE system, the assessment of BTEX in the soils beneath the site was completed during the closure sampling phase.

4.3 VOLATILE ORGANIC COMPOUNDS

A total of 21 soil samples were collected beneath selected sumps, drains, clarifiers and AGTs and analyzed for volatile organic compounds by U.S. EPA method 8260 (Figure 4). Chloroform and methylene chloride were reported in four soil samples collected below the clarifier between Building 2 and 14, and along the drain line due west of the former "chlorimide system," and AGT Area I at concentrations ranging between 0.012 and 0.110 (Figure 4). The low concentrations in the soil in this area are similar to those reported in soil samples collected from EMCON borings B-1, B-46 and B-50 (EMCON, August 5, 1992; EMCON, April 9, 1993) (Plate 1). Neither chloroform nor methylene chloride reported in these soil samples exceeded either their industrial PRG or calculated screening level value (Table 5). Additional exploratory post-closure soil borings were recommended to assess the lateral and vertical extent of chloroform, and to confirm the presence of methylene chloride in the area of the Building 14 Clarifier (Fugro, December 16, 1996). Monitoring well MW-11, installed during post-closure sampling program was relocated to be closer to and downgradient from these sample locations. Well MW-11 was relocated to provide a better assessment of potential chloroform impacts on shallow groundwater in this area.

The 1,2,4 and 1,3,5 TMB were reported at concentrations of 0.650 and 0.190 mg/kg, respectively, in soil sample R-1 collected below the west end of the main gate clarifier at a depth of 16 feet bgs (Figure 4). Although the concentrations of TMB were below the PRG and screening level criteria, post-closure boring EB-1 was relocated from its proposed closure plan location to the west end of the former clarifier to provide additional assessment data below sample R-1.

4.4 FORMALDEHYDE

Tests for formaldehyde were performed on 18 soil samples collected from AGT Area V and from along the trench drain adjacent to the former chlorimide system and AGT Area I (Figure 5). Formaldehyde was reported in samples collected from the AGT Area V due east of former Building 8 at concentrations ranging from 2.9 to 50.1 mg/kg (Table 7). One soil sample VD.3, collected below a sump adjacent to the former "chlorimide system" contained formaldehyde at a reported concentration of 2.7 mg/kg. The method blanks for the samples collected contained formaldehyde at concentrations of 1.3 and 1.5 mg/kg. None of the samples analyzed contained formaldehyde concentrations in excess of the industrial PRG of 100,000 mg/kg or the screening level estimate of 59.

The highest concentrations were reported in soil samples AV-A and AV-B collected adjacent to the former formaldehyde storage tanks and the sump due south of the tanks in AGT Area V (Figure 5). Because of the presence of formaldehyde in the method blanks and its natural presence within the environment, soil samples with concentrations below 3 mg/kg should be considered background. Additional sampling was recommended to assess the vertical extent of the sample with the highest formaldehyde concentration (AV-B), and the separation to groundwater in this area.

The presence of formaldehyde in the soil sample VD.3 (2.7 mg/kg), collected within and subadjacent to the "chlorimide system," is near the method blank concentration of 1.5 mg/kg and probably is not indicative of a release in this area (Figure 5). Further, the source of the formaldehyde within the "chlorimide system containment area" is not consistent with its reported use at the site.

4.5 pH

pH was the most frequently tested analyte below the sumps, drains, clarifiers and AGT areas (Figure 6). A total of 86 soil samples were collected and tested for pH. The majority of the pH values ranged between 7 and 9, with six soil samples exhibiting values below 5 or equal to or above 10 (Tables 6 and 7). Soil sample S-2 collected at a depth of 3 feet bgs during the removal action in the acid containment area contained a reported pH of 4.3. This affected soil was removed to a depth of 5 feet bgs. Confirmatory soil sample S-5 collected 2 feet below and north of S-2 contained a pH of 7.8. The shallow depth of the confirmatory soil sample of 5 feet bgs indicates the affected soil was limited in vertical extent below the former acid tank containment area. The soil sample (HA-10) with the highest pH (11.6) was collected at a depth of 5 feet bgs adjacent to the former caustic unloading sump (Figure 6). Additional pH values over 10 were reported in soil samples collected below the main gate clarifier (R-1), brine tank (BT-B) caustic unloading sump (J-S) and spray dryer area and Building 5 (L). None of the pH values reported

exceed CCR Title 22 criteria (section 66261.22) for classification of a waste as hazardous by characteristics.

Local elevated pH conditions in the soil do not appear to have affected the shallow groundwater beneath the site. Historically, field pH measurements of groundwater samples collected have not been above 9, and frequently range from 7 to 8. However, groundwater samples collected from onsite monitoring wells sampled during the post-closure program were additionally analyzed for pH by U.S. EPA method 150.1.

4.6 PHOSPHATE, CHLORIDE AND AMMONIA

Sixteen (16) soil samples were collected and tested for phosphate as part of the closure program. The reported phosphate concentrations in these samples ranged from 1.4 to 6.9 mg/kg (Tables 6 and 7).

Thirty-three (33) soil samples were analyzed for ammonia by U.S. EPA method 350.2 (Tables 2 and 3). Reported ammonia concentrations in these samples ranged from 28 to 470 mg/kg. The highest concentrations were reported in soil samples (AV-A and AV-E) collected from AGT Area V east of former Building 8 (Plate 2). None of the sample concentrations reported exceeded the PRG of 100,000 mg/kg for ammonia. Sample AV-A contained an ammonia concentration near the screening level estimate of 484 mg/kg. Additional sampling was performed during the post-closure assessment program in AGT Area V assess the lateral and vertical extent of ammonia identified in samples AV-A and AV-E.

Sixty-two (62) soil samples were analyzed for chloride by U.S. EPA method 300.1 (Tables 2 and 3). The majority of the samples were collected below AGT Areas I, IV, and V, the main clarifiers and drains in Building 5 and adjacent to the former "chlorimide system" (Figure 7). Chloride concentrations above 1,000 mg/kg, and at or above the screening level criteria of 2,688 mg/kg, were reported in samples AGT closure samples AI-A, AIV-D, AV-C and V-SM (Figure 7). The remaining 53 soil samples analyzed for chloride were well below the screening level criteria.

4.7 METHYLENE BLUE ACTIVE SUBSTANCES (MBAS)

Soil samples collected below the AGT Areas V, VI and VIII and the main clarifiers, sumps and drains were tested for MBAS by U.S. EPA method 425.1M (Figure 8). MBAS concentrations ranged from 1.3 to 1,600 mg/kg and were the highest in samples collected in the AGT Area V "detergent area," AGT Area VIII "stormwater retention area" and samples S and H.1 collected below the clarifier north of AGT area VIII and drain between Buildings 4 and 7, respectively. The majority of the soil samples analyzed contained MBAS concentrations in excess of the screening level criteria of 5.4. Additional sampling was recommended in the AGT Area V to assess the

lateral and vertical extent of MBAS where it was reported at the highest concentrations in soil samples collected during the closure program. Additionally to assess the impacts to shallow groundwater, MBAS was also included as an analyte in the groundwater sampling program for onsite wells sampled during the post-closure assessment.

5.0 POST-CLOSURE SAMPLING RESULTS

The post-closure program soil results are provided in Table 8, and are presented on Figures 9 through 12. Groundwater sampling data and results are provided in Table 1 and on Figure 2. Certified analytical laboratory reports and Chain-of-Custody documentation for post-closure assessment samples is provided in Appendix C.

5.1 RESULTS OF POST-CLOSURE SOIL SAMPLING

5.1.1 Petroleum Hydrocarbons

Soil borings EB-4 through EB-7 and EB-12 and EB-13, were drilled to assess the lateral and vertical extent of petroleum hydrocarbons in the C13-C22 range, identified in soil samples collected from borings HA-2 and HA-7 (Figure 9).

Petroleum hydrocarbons were not reported in soil samples collected to a depths between 10 and 20 feet from borings EB-4, EB-5 and EB-6 (Figure 9). Petroleum hydrocarbons were reported at a concentration of 580 mg/kg in the soil sample collected at a depth of 5 feet bgs from boring EB-7, drilled north of boring HA-2 and EB-4 (Figure 9). The low concentrations of petroleum hydrocarbons at this depth appear to be related to those identified from the closure of sump C1, approximately 25 feet north of HA-2 and adjacent to boring EB-7 (Figure 3 and Plate 2). Based on the sampling data hydrocarbons identified at a depth of 3 feet in the soil sample collected from boring HA-2 appear to be localized.

Exploratory soil borings EB-12 and EB-13 were drilled to assess the vertical and lateral extent of petroleum hydrocarbon impacted soil with TPH concentrations greater than screening level criteria identified from the soil sample collected at 5 feet in boring HA-7 (Figure 3). Soil samples collected from these borings contained TPH concentrations ranging from 0.68 to 1500 mg/kg at depths between 5 and 30 feet bgs. The highest concentrations, above 1000 mg/kg were reported at a depth of 10 feet bgs in both borings. These were the only two borings with TPH concentrations in excess of screening level criteria. Using the data from EMCON borings E-52 and E-53 (EMCON, April 9, 1993), and the recent data, the lateral and vertical extent of petroleum hydrocarbons identified by a 5-foot sample from boring HA-7 has been delineated. The source for hydrocarbons identified in this area is likely the former alkane tank (0223) (Plate 3).

5.2.2 Petroleum Aromatic Compounds

Three confirmatory soil borings, CB-1, CB-2 and CB-3 were drilled to assess the effectiveness of the SVE in the area of the old garage and laboratory. Low concentrations of residual BTEX compounds were reported in soil samples collected at depths between 20 and 45 feet bgs. BTEX concentrations over this interval ranged from 0.005 to 200 mg/kg and were generally below 0.1 mg/kg (Figure 10). Three soil samples, one from boring CB-2 and two from boring CB-3, contained BTEX concentrations over 1 mg/kg (Table 8). The highest concentrations were reported at depths of 20 and 30 feet bgs in soil samples collected from boring CB-3, above and within a clay. The BTEX concentrations reported are generally well below those reported in soil samples collected from borings drilled during the Phase II, III and IV assessments conducted prior to initiation of the SVE. The majority of the soil samples analyzed contained BTEX concentrations below screening level criteria, indicating that the SVE was effective in removing and reducing volatile petroleum aromatic hydrocarbons to acceptable levels.

TPH concentrations in the soil samples collected from borings CB-2 and CB-3 ranged from 0.58 to 4200 mg/kg (Figure 10). Petroleum hydrocarbons quantified by EPA method 8015M were not reported in soil samples collected from boring CB-1 above PQLs. Only two soil samples from the 36 analyzed contained TPH concentrations above 100 mg/kg (Table 8). These samples were collected from boring CB-3 at depths of 20 and 25 feet bgs within and above a fine-grained clayey interval. Petroleum hydrocarbon concentrations in soil samples collected below this interval were not reported at concentrations above 15 mg/kg (Table 8).

5.2.3 Volatile Organic Compounds

Exploratory soil borings E-1 and EB-9 through EB-11 were drilled to assess the extent of 1,2,4- and 1,3,5-TMB and chloroform and methylene chloride reported in closure samples R-1 and O-E and O-W, respectively (Figure 11). Chloroform was reported in soil samples collected from borings EB-8 through EB-11 to depths of 25 feet bgs, at concentrations of between 0.01 to 0.64 mg/kg. Chloroform was reported in soil samples collected within and above a fine-grained clayey horizon reported to a depth of 25 to 30 feet in these borings, but was not detected above PQLs in soil samples collected below this interval (Table 8). Chloroform was not reported in soil samples above this interval at concentrations in excess of the industrial PRG and screening level criteria. The extent of chloroform has been delineated vertically in the area of closure samples Q-E and Q-W, but has not been delineated laterally to non-detectable levels (Figure 11). The lateral extent of chloroform has been delineated by borings EB-8 through EB-11 in this area to PRG and screening level concentrations.

Methylene chloride was not reported in soil samples collected from borings EB-8 through EB-11 at concentrations above PQLs (Table 8). The absence of methylene chloride in the soil samples

collected from these borings suggests that the presence of this compound is limited below the former clarifier.

Low concentrations of 1,2,4- and 1,3,5-TMB and naphthalene ranging from 0.011 to 0.22 mg/kg were reported in soil samples collected from Boring EB-1 to depths of 25 feet bgs. Similar to the distribution of chloroform, these analytes were found within and above a sandy silt layer present to a depth of 32 feet bgs. In addition to these VOCs, petroleum hydrocarbons were reported in soil samples collected from boring EB-1 at depths of 5 to 25 feet bgs (Table 8). TPH concentrations were below 100 mg/kg in samples collected below 15 feet from boring EB-1. The soil sample collected at 5 feet bgs contained a TPH concentration of 1700 mg/kg, mostly within the C13-C22 range and the soil sample collected at 15 feet contained a TPH concentration of 172 mg/kg within the C_4 to C_{23+} range.

Although not reported in closure samples Q-E and Q-W, dichlorodifloromethane, 1,1 dichlorethane (1,1-DCA) and trichloroethene (TCE) were reported in soil samples collected to a depth of 45 feet bgs from boring EB-8 and EB-10 (Figure 11). The low concentration of TCE (0.0032 mg/kg) reported in the soil sample collected from boring EB-10 at 45 feet bgs likely represents saturated conditions and is a reflection of contamination from the groundwater. TCE concentrations in soil samples from boring EB-8 ranged from 0.0031 to 0.051 mg/kg in soil samples collected at depths of 25 to 40 feet bgs. The lateral extent of TCE, 1,1-DCA and dichlorodifluoromethane appears localized below the former clarifier between Building 2 and 14, and has been delineated laterally by the post-closure borings EB-9, EB-10 and EB-11. The presence of these compounds is anomalous given they have not been reported in soil samples collected from Pre-Closure or Closure sampling programs nor has their use been documented at the site. Further, the distribution of TCE does not match that of chloroform, which was reportedly used at the site, as it was detected in soil samples collected below not above the fine-grained clayey interval encountered in boring EB-8 at a depth of 20 feet bgs. One soil sample collected at a depth of 30 feet contained a TCE concentration in excess of the RWQCB screening level criteria. None of the compounds reported in soil samples collected from boring EB-8 contained concentrations in excess of PRGs.

5.2.4 Formaldehyde, Ammonia and MBAS

Five exploratory soil borings, EB-14 through EB-18 were drilled in AGT Area V to assess the lateral and vertical extent of formaldehyde, ammonia and MBAS reported in closure samples AV-A, AV-B and AV-E (Table 6).

Formaldehyde was reported in soil samples collected to a depth of 20 feet bgs at concentrations ranging from trace levels (<3 mg/kg) to 23.6 mg/kg (Figure 12). Soil samples collected from borings EB-14 and EB-15 drilled within the former AGT Area V containment showed a general

decreasing trend in formaldehyde concentrations in soil samples collected to a depth of 20 feet bgs (Figure 12). The highest formaldehyde concentrations were reported in soil samples collected from these borings at a depth of 10 feet bgs. As with previous analyses for formaldehyde, because of its presence in the environment and in the method blanks, concentrations below 2.4 mg/kg should be considered background. Although the vertical and lateral extent of formaldehyde was not delineated by the five borings within and adjacent to AGT Area V, none of the soil samples contained concentrations in excess of the screening level criteria or the PRG.

Ammonia was not reported above PQLs in soil samples collected from borings EB-14 through EB-18 (Table 8). The absence of this COC in these samples suggests that ammonia reported in closure samples AV-A and AV-E is limited to near-surface soils within the former AGT containment.

Fourteen soil samples were collected for analysis of MBAS from boring EB-14 through EB-18. MBAS concentrations in these samples ranged from 1.9 to 12 mg/kg, well below previously reported closure samples AV-A and AV-B (Table 8). Based on the results of soil samples collected from borings EB-14 and EB-15, the vertical extent of MBAS within the former AGT Area V appears limited to depths of 5 feet bgs. The lateral extent of MBAS was not completely delineated by the borings drilled to a depth of 10 feet around the former AGT containment. Soil samples from borings EB-16 and EB-18 contained MBAS at low concentrations at or below screening level criteria (Figure 12).

5.3 RESULTS OF GROUNDWATER SAMPLING

Groundwater samples were collected from the eight onsite monitoring wells on February 24 and 25, 1997. Benzene was only reported in groundwater samples from wells MW-6, MW-7 and MW-13, at concentrations between 0.67 and 2.8 µg/l, well below previously reported values (Table 1). Similarly, petroleum hydrocarbons were only reported above PQLs in the sample from well MW-7 at a concentration of 0.55 mg/l. With the exception of the sample from well MW-6, BTEX compounds were not reported at concentrations above their respective MCLs. On the basis of samples collected in February, 1997, the extent of the groundwater impacted by BTEX compounds has been delineated on the subject site (Figure 2)

1,1-DCA was the most frequently reported VOC in samples collected from wells MW-3, MW-6, MW-7, MW-11 through MW-13 at concentrations below MCLs, and ranging from 0.68 to 3.3 µg/l (Table 1). Low concentrations of TCE were reported in groundwater samples collected from wells MW-3 and MW-12 at concentrations of 3.4 and 12 µg/l. Chloroform was reported in the sample from well MW-7 at a concentration of 1.7 µg/l, below the MCL. 1,2-DCA and 1,2-DCP, reported in groundwater samples collected previously from wells MW-6 and MW-7 were not reported in any

sample above PQLs. In general, with the exception of 1,1-DCA, VOC concentrations were lower and in some instances compounds were not reported in comparison to previous sampling events. With the exception of the groundwater sample from well MW-12, no VOC concentration reported above PQLs was above its respective MCL. Using TCE, 1,1-DCA, 1,2-DCA and chloroform as indicators, the distribution of VOCs from groundwater samples collected suggests contribution from offsite sources (Figure 1).

Formaldehyde was reported in all the groundwater samples collected at concentrations ranging from trace levels (<0.025 mg/l) in upgradient well MW-1, to 0.224 mg/l in the water sample collected from well MW-6 (Table 1). The highest concentrations were reported in groundwater samples collected from wells MW-6 and MW-7, located in the central portion of the subject site and well MW-2 located at the southeastern corner of the site. The distribution of formaldehyde in the groundwater samples collected is not consistent with closure and post-closure sampling data or its reported use at the site. Given that formaldehyde was reported in soil samples collected in AGT Area V and it was reportedly used in that area, the highest concentrations of formaldehyde would be expected in wells MW-2 or MW-13, given historic and recent groundwater flow directions (Figure 2). Formaldehyde concentrations reported in groundwater samples collected in February 1997, are below the PRG of 5.5 mg/l for tap water.

Similar to formaldehyde, MBAS was reported all onsite wells, including the upgradient well at concentrations ranging from 0.14 to 22 mg/l. Groundwater samples from wells MW-2, MW-6 and MW-13 contained MBAS concentrations in excess of the secondary MCL of 0.5 mg/l (Figure 2). Chloride was reported in all groundwater samples collected at concentrations of 98 to 9400 mg/l (Figure 2). The highest concentrations were reported in groundwater samples collected from wells MW-6 and MW-7, centrally located within the subject site. The secondary MCL for chloride of 500 mg/l was exceeded in all groundwater samples collected except for those from upgradient well MW-1 and downgradient well MW-12. Ammonia concentrations in the eight groundwater samples collected were relatively uniform and ranged from 1.2 to 13 mg/l. Normalized to nitrate (NO_3), with the exception of the sample from well MW-7, these ammonia concentrations are below the secondary MCL of 45 mg/l.

6.0 CONCLUSIONS

Inclusive of prior assessments, the closure program and post-closure sampling program, 468 soil samples have been collected at the subject site. Seven groundwater sampling events have been performed since April 1992 to assess onsite, upgradient and downgradient water quality. The following conclusions are offered, based on assessment and remedial actions performed at the site.

6.1 SUBSURFACE SOIL CONDITIONS

6.1.1 Petroleum Hydrocarbons

- The majority of soil samples collected with elevated concentrations of petroleum hydrocarbons appear to be shallow and related to a release from a former sump or drain. Within the southeastern corner of the site and the former alkylate unloading sump, alkane tank and stormwater retention area, petroleum hydrocarbon impacted soils are found over a wider area and extending to a depth of up to 30 feet bgs. Hydrocarbons identified from soil samples collected in this area are identified as primarily dodecylbenzene and appear to be related to multiple sources including the alkylate sump and piping and the alkane tank.
- Post closure sampling to assess the extent of petroleum hydrocarbons in two areas with concentrations over screening level criteria showed the extent of hydrocarbons to be limited vertically to depths of less than 30 feet. Petroleum hydrocarbon concentrations were not reported in soil samples collected below 10 feet bgs at concentrations in excess of or the screening level criteria (1000 mg/kg). The assessment of petroleum hydrocarbons identified from closure samples with concentrations in excess of screening level criteria has been completed and delineated both laterally and vertically.
- The results of the risk assessment performed by EMCON concluded that there are no significant human health impacts expected to result from exposure of onsite workers to dodecylbenzene-impacted soils. The results of the amended risk assessment concluded that dodecylbenzene was not expected to leach to the groundwater and that exposure through volatilization and other exposure pathways are below levels of concern established by regulatory agencies (EMCON, February 1997).

6.1.2 Petroleum Aromatic Compounds

- Confirmatory soil borings drilled to assess the effectiveness of SVE in the area of the old garage and laboratory identified residual BTEX compounds at concentrations well below previous concentrations reported in soil samples collected prior to initiation of the SVE.

The majority of soil samples collected did not contain BTEX concentrations above PQLs and, with the exception of five samples, benzene concentrations were below screening level criteria. The absence and general reduction of volatile aromatic compounds and mass reduction are a good indication that SVE was effective in reducing and mitigating petroleum hydrocarbon impacts identified in the unsaturated zone in the area of the old garage and laboratory.

- Additionally, indirect evidence for the efficiency of the SVE in removing the mass of aromatic hydrocarbons in this area is also provided by the lower BTEX concentrations in groundwater samples collected from wells MW-6 and MW-7 directly downgradient from old garage and laboratory. Groundwater samples from these wells contained benzene at concentrations at or below MCLs, and showed a sharp decline from previous BTEX data collected prior to SVE shutdown.
- Although local soil zones containing benzene are present above screening level criteria, further operation of the SVE to remove these residual compounds does not appear warranted. A respirometry test performed at the completion of SVE provided evidence that these compounds may attenuate naturally, without further active remediation.

6.1.3 Volatile Organic Compounds

- Chloroform was the most frequently detected VOC in the closure and post-closure samples analyzed and was reported in the area of the clarifier between Building 2 and 14. Chloroform in this area was not reported below a depth of 25 feet bgs and is contained above a fine-grained clayey horizon at depths to 20 to 25 feet bgs. Chloroform concentrations were not reported above the PRG or the screening level criteria. The lateral extent of chloroform in this area has not been delineated to "nondetectable" levels, but has been delineated to concentrations below screening level criteria and PRGs.
- Methylene chloride reported in closure samples collected below the Building 2 and 14 clarifier is limited. The absence of methylene chloride in the soil samples collected from borings drilled through and around this former clarifier location, suggests that the presence of this compound is limited. Its presence in the one closure sample collected from this area also suggests that it may have been an artifact of laboratory contamination.
- The low concentrations of TCE, 1,1-DCA and dichlordifluoromethane identified from soil samples collected below the former Building 2 and 14 clarifier are anomalous. The lateral extent of TCE, 1,1-DCA and dichlorodifluoromethane appears localized below the former clarifier between Building 2 and 14 and has been delineated laterally above the water table by the post-closure borings EB-9, EB-10 and EB-11. The presence of these compounds is

anomalous given they have not been reported in soil samples collected from Pre-Closure or Closure sampling programs, nor has their use been documented at the site.

- The distribution of TCE in soil samples collected around Building 2 and 14 does not match that of chloroform as it was reported in samples collected below, not above, the fine-grained clayey interval encountered in boring EB-8 at a depth of 20 feet bgs. Given the higher volatility of chloroform, if these VOCs were from the former clarifier, it would be anticipated that TCE would be present above the clayey horizon not just below. One soil sample collected at a depth of 30 feet contained a TCE concentration slightly above the RWQCB screening level criteria. None of the anomalous VOCs reported in soil samples collected from boring EB-8 contained concentrations in excess of PRGs.

6.1.4 Formaldehyde

- Formaldehyde was reported in closure samples and subsequent post-closure samples collected to a depth of 20 feet in AGT Area V. The highest concentrations in soil samples collected in this area are found at depths of 5 to 10 feet bgs. Although the vertical and lateral extent of formaldehyde was not delineated to "nondetectable levels" by the five borings within and adjacent to AGT Area V, none of the soil samples contained concentrations in excess of the screening level criteria or the PRG.

6.1.5 pH

- With the exception of six soil samples collected beneath the site, the pH in site soils generally range from 7 to 9.5. Five soil samples with pH values equal or over 10, indicating alkaline conditions were encountered below areas where alkaline materials were stored or managed (caustic unloading sump, soda ash unloading sump and spray dryer sump) or below waste management units (main gate clarifier and brine tank). The sample collected adjacent to the caustic unloading sump (HA-10) contained the highest pH in the soil at 11.6.
- The low pH reported in soil sample S-2 (4.3) and subsequent confirmatory soil samples collected at the conclusion of removal operations, indicates that low-pH soils were excavated. The shallow depth of the confirmatory soil sample of 5 feet bgs indicates the affected soil was limited in vertical extent below the former acid tank containment area.
- Local elevated pH conditions in the soil do not appear to have affected the shallow ground water beneath the site. Groundwater samples collected during the post-closure monitoring program exhibited a pH ranging from 6.6 to 7.5.

6.1.6 Phosphates, Ammonia and Chloride

- The samples analyzed for phosphate contained concentrations that are not considered significant, nor above what may be expected to occur naturally in native soils.
- Samples analyzed for ammonia contained concentrations well below the industrial PRG and were below the screening level estimate. The one exception is the sample collected from within AGT Area V (AV-A) which contained an ammonia concentration of 470 mg/kg that approached the screening level estimate of 484 mg/kg. Ammonia was not reported at concentrations above PQLs in soil samples collected to depths of 10 and 20 feet bgs in AGT Area V. Elevated concentrations of ammonia reported from closure samples collected in that area appear to be limited in vertical and lateral extent to less than 5 feet.
- Chloride was reported at concentrations above the screening level criteria in two soil samples collected below the former "chlorimide system" (AGT Area I). Chloride was also reported in two soil samples collected from AGT Areas IV and V at concentrations near screening level criteria. The remaining samples analyzed for chloride are well below the screening level criteria.

6.1.7 MBAS

- The majority of MBAS samples collected as part of the closure program exceeded the screening level criteria. The highest concentration of MBAS (1,600 mg/kg) was reported in AGT Area V "detergent area" in soil sample AV-A. Although MBAS were reported above the screening level criteria, it does not appear to have greatly effected the shallow groundwater beneath the site, given that only 3 of 8 groundwater samples collected from onsite wells exceeded the secondary MCL of 0.5 mg/l.
- Fourteen soil samples collected for analysis of MBAS from borings in and around AGT Area V contained MBAS concentrations ranging from 1.9 to 12 mg/kg, well below previously reported closure sample concentrations. Based on soil samples collected from post-closure borings, the vertical extent of MBAS below the former AGT Area V Tank farm is limited to soils less than 5 feet bgs. The lateral extent of MBAS was not completely delineated by the borings drilled to a depth of 10 feet around the former AGT containment. Soil samples from borings EB-16 and EB-18 contained MBAS at low concentrations at or below screening level criteria

6.2 GROUNDWATER

- The extent of the BTEX plume has been delineated on the subject site. BTEX concentrations in excess of primary MCLs were reported in well MW-6 centrally located on

the site. Data collected in February 1997 show generally lower concentrations of BTEX compounds in the groundwater samples collected. The occurrence of BTEX in the groundwater has remained relatively stable since monitoring began in 1992 with the highest concentrations reported in samples collected from wells MW-6 and MW-7, centrally located on the site.

- The reduction in BTEX concentrations in groundwater samples collected from well MW-6 and MW-7 can be in part attributed to a reduction in source area mass and the completion of the SVE program upgradient of wells MW-6 and MW-7. This decrease in concentration also provides indirect evidence that the mass of petroleum hydrocarbons and VOCs in the soil has been substantially reduced by the SVE in the area of the old garage and laboratory.

- In general, with the exception of 1,1-DCA, VOC concentrations were lower and in some instances compounds were not detected in locations where they had been encountered during previous sampling events. With the exception of the groundwater sample from well MW-12 that had a TCE concentration of 12 µg/l, no VOC concentration reported above PQLs was above its respective MCL. Using TCE, 1,1-DCA, 1,2-DCA and chloroform as indicators, the distribution of VOCs from groundwater samples collected supports prior hypotheses and suggested contribution from offsite sources

- Although anomalous, the small mass of TCE identified above the water table at low concentrations in soil samples collected from boring EB-8 do not appear or may have a negligible impact on shallow groundwater. Groundwater samples collected from wells MW-6, MW-7 and MW-11, down- and cross-gradient from exploratory soil boring EB-8 did not contain TCE at concentrations above PQLs. Historically, TCE concentrations in wells MW-6 and MW-7 have remained stable.

- Formaldehyde, although reported in soil samples collected from AGT Area V, was not reported at concentrations above the PRG for tap water. The distribution of formaldehyde with the highest concentrations reporting in a well located centrally to the site is not consistent with closure and post-closure sampling data or its reported use at the site. Given that formaldehyde was reported in soil samples collected in AGT Area V at relatively low concentrations and below screening level criteria and it was reportedly used in that area, the highest concentrations of formaldehyde would be expected in wells MW-2 or MW-13 given historic and recent groundwater flow directions. The highest concentrations of formaldehyde would not be anticipated in wells MW-6 and MW-7, located in the central portion of the site, away from suspected source areas, or areas of reported use.

- Three groundwater samples collected in February 1997 contained MBAS at concentrations above the secondary MCL of 0.5 mg/l. The limited occurrence of MBAS above the secondary MCL suggests that this compound generally has not leached into the shallow

groundwater from sources within the site. Sampling in the area of AGT Area V showed concentrations of MBAS to be limited to shallow soils at depths less than 5 feet bgs.

- Chloride was reported in all groundwater samples collected at concentrations of 98 to 9400 mg/l. The highest concentrations were reported in groundwater samples collected from wells MW-6 and MW-7, centrally located within the subject site. The secondary MCL for chloride of 500 mg/l was exceeded in all groundwater samples collected except for those from upgradient well MW-1 and downgradient well MW-12. The source for elevated chloride concentrations in this area could be the former bleach holding tank in Building 2.

7.0 SUMMARY OF FINDINGS

The closure and post-closure assessment data shown for residual COCs have been addressed for the site. In summary, the following are provided in support of "no further action" at the subject site:

- PRGs designed to establish concentrations of COCs in soil that would be protective of human health at an industrial site, were not exceeded in any of the soil samples analyzed from closure and post-closure sampling;
- Petroleum hydrocarbons in the diesel and oil ranges were not reported in closure and post-closure soil samples collected below 10 feet bgs at concentrations in excess of the screening level criteria (1000 mg/kg). The assessment of petroleum hydrocarbons identified from closure samples with concentrations in excess of screening level criteria has been completed and delineated both laterally and vertically;
- Risk assessment has provided an analysis of uncertainty and risk regarding the alkylate unloading and alkane tank area showing the residual petroleum hydrocarbons, to a depth of 30 feet, not to be a threat to human health and shallow groundwater;
- The absence and general reduction of volatile aromatic compounds and mass reduction are a good indication that SVE was effective in reducing and mitigating petroleum hydrocarbon impacts identified in the unsaturated zone in the area of the old garage and laboratory;
- The former UST under the southwestern corner of Building 8 was removed and closed consistent with LACDPW requirements;
- Groundwater sampling data indicates stable and declining BTEX concentrations. BTEX concentrations above primary MCLs are delineated onsite and are historically confined to the central portion of the property;
- With the exception of TCE in one sample from a downgradient well, the majority of VOC concentrations are below MCLs. The distribution of VOCs supports prior hypotheses that there is an offsite source;
- Formaldehyde concentrations in groundwater samples collected are below PRGs with the highest concentrations reported in samples collected from wells centrally located on the property, and;
- Three groundwater samples collected in February 1997 contained MBAS at concentrations above the secondary MCL of 0.5 mg/l. The limited occurrence of MBAS above the secondary MCL suggests that this compound generally has not leached into the shallow groundwater from sources within the site.

The two exceptions to completion of site assessment activity are delineation of the lateral extent to "nondetectable levels" of chloroform and formaldehyde in soils around the former Building 2 and 14 clarifier and AGT Area V. Given the concentrations of these COCs are low, below screening level criteria and below PRGs, the extent of delineation appears adequate in these areas. Given the above data generated for the site, ENSR requests that the RWQCB consider issuance of a "no further action" letter for the soils and groundwater at the subject site.

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TABLES

PLATES

TABLE 7
Analytical Results for Closure Samples
Underground and Aboveground Storage Tanks and Areas of Concern

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25	none	none	100,000	none	none	none	none	none	
UNDERGROUND TANKS																				
Former Diesel Tank next to Firestone Blvd. (10,000 gal.)	None																			
Former Alcohol Storage Tank south of Bldg 15 (12,000 gal.)	None																			
Former 100-gal Fuel Storage Tank below the 150,000 gallon water tank	HA-1	1	ND	ND	ND	ND	ND	ND	ND											
Former #2 Fuel Oil Tank below the SW corner of Bldg 8 (4,200 gal.)	1A	12				ND	ND	ND	ND											(TRPH)
	1B	12				ND	ND	ND	ND											54
	North	8	ND	ND	ND	ND	ND	ND	ND											12
	South	8	ND	36	ND	ND	ND	ND	ND											
	East	10	ND	150	ND	ND	ND	ND	ND											
	West	10	1.1	160	ND	ND	ND	ND	0.017											
Former Fuel (gasoline) Tanks adjacent to the Old Laboratory and Garage (10,000 and 550 gal.)	CB-1	5 to 50	REFER TO TABLE 8 FOR RESULTS																	
	CB-2	5 to 50	REFER TO TABLE 8 FOR RESULTS																	
	CB-3	5 to 50	REFER TO TABLE 8 FOR RESULTS																	
Former Diesel Tank, South-eastern corner of the Site (10,000 gal.)	None																			
Former Brine Tank between RR tracks and west of Caustic Unloading Area	BT-A	8	ND	ND	ND									9.6	1.4	50				
	BT-B	8	ND	ND	ND									10	1.6	46				(TRPH)
	Sediment(4)					ND	ND	ND	ND	ND	ND	ND	ND	10.13						265
Former Acid Tank Containment, west of Bldg 8	B-1	6												7.4						
	B-2	6												8.4						
	B-3	6												8.2						
	B-4	6												8.4						
	S-1	3												8.4						
	S-2	3												4.3						
	S-3	3												7.5						
	S-4	3												7						
	S-5	5												7.8						
ABOVEGROUND TANKS																				
AREA I - "Chloramide System" Tanks east of Building 1 (Tanks 1-5, Plate 1)	AI-A	4															2600			
	AI-B	4															28			

TABLE 6
Analytical Results for Closure Samples
Sumps, Drains and Clairfiers

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds(1)										
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2m	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limit			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25			100,000	none	none	none	none	none	
CLOSURE EXCAVATION STOCKPLIES																				
Clarifier Between Bldg 2 and 14 (Closure Samples QE and QW)	K-1,2,3,4(4)	2 (5)																		130 (TRPH) Title 22 Metals
Main Clarifier preceeding sewer discharge, south gate (Closure Samples R-1 and R-2)	R-SP 1, (4) 2,3 and 4	2 (6)	ND	ND	21					ND	ND	ND	ND		9.6(6)	ND	48.7(6)		54.3(6)	
Sump inside Bldg. 8, Central next to Oleum Tanks (Closure Sample ZX)	ZX-SP-1	2 (6)													7.1					
Sump within Area III, Oleum AGT Containment area (Closure Sample G)	G-SP-1	2 (5)													6.9					

NOTES

Refer to PLATE 2 for sample locations
Certified Analytical Laboratory Reports and Chain-of-Custody Documentation are provided in Appendix B.
ALL Methods shown are U.S. EPA Methods unless otherwise listed.

ND = Not detected at the practical quantitation limit
ND(<50) = Not detected at an elevated method detection limit shown in paranthesis. Elevated limits due to matrix interfearences.
PRG = Preliminary remediation Goal, U. S EPA Region IX, September, 1995, for industrial soils

TPH-FC = Total Petroleum Hydrocarbons, Fuel Charaterization (C4 - C12, C13 - C22, C23+)
1,2,4 TMB = 1,2,4 Trimethylbenzene
1,3,5 TMB = 1,3,5 Trimethylbenzene
Form = Formaldehyde
MBAS = Methylene Blue Active Substances

(1) Volatile Organic Compounds reported in the soil samples collected and analyzed by EPA method 8260. Remaining VOCs from EPA 8260 Analysis were not reported above method detection limits.
(2) Liquid sample from fluid that was released into the sump pit upon removal of the conveyance piping.
(3) Sample additonally analyzed for PCBs by U.S EPA Method 8080
(4) Stockpile samples from remedial excavation activtes were additionally analyzed for 22 CCR metals and Total Recoverable Petroleum Hdyrocarbons (TRPH), by U.S EPA Methods 6000/7000 series and 418.1
(5) Soil samples were collected approximately 2 feet into the stockpile
(6) The value reported represents the arithmetic average of the four individual samples. The samples were not composited for these analytes

TABLE 6
Analytical Results for Closure Samples
Sumps, Drains and Clairfiers

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds(1)										
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2m	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limit			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25			100,000	none	none	none	none	none	
Clarifier between Bldgs. 2 and 14	Q-E	8								0.11	ND	ND	ND							
	Q-W	8								0.059	0.026	ND	ND							
Main Clarifier preceeding sewer discharge, south gate	R1	16	ND	49	ND					ND	ND	0.65	0.19		10.1	ND	85		230	
	R2	16	0.61	13	ND					ND	ND	ND	ND		9.9	ND	43		47	
Clarifier North of storm water retention tanks	S	10	0.56	170	ND					ND(<0.5)	ND(<0.5)	ND(<0.2)	ND(<0.2)		8.4	0.54	110		310	
	Sw	8	1.5	200	ND					ND(<0.2)	ND(<0.2)	ND(<0.1)	ND(<0.1)		8.7	3.1	200		57	
Clarifier southeast corner of Bldg. 15	T	8	ND	ND	ND					ND	ND	ND	ND							
Clarifier east of Bldg. 8	U-1	6.5	ND	ND	ND										8.1		110	ND		
	U-2	6	ND	ND	ND										8.2		75	ND		
	U-3	5.5	ND	ND	ND										8.3		150	ND		
DRAINS																				
Trench drain between Bldgs. 1 and 14	V.3	4								0.054	ND	ND	ND	2.7			330	ND		
	V-N	6								0.033	ND	ND	ND	ND			55	ND		
	V-NM	6.5								ND	ND	ND	ND	ND			580	ND		
	V-SM	6.5								ND	0.012	ND	ND	ND			3000	ND		
	V-S	6.5								ND	ND	ND	ND	ND			44	ND		
Drain east of Area V, AGTs and the Formaldehyde tanks	W	None																		
Sump east of Bldg. 4 and old cooling tower	X-1.3	3																ND		
Storm drain near south gate	Y.3	3								ND	ND	ND	ND		9					
Storm drains outside of Bldg. 6	Z.3	3	ND	ND	ND										8.2		52		18	
	A1	3	ND	ND	26										8.6		490		2.8	
	B1	3	ND	ND	ND										9.3		130		2.8	
	C1	3	0.78	48	76										10.1		140		5	
Storm drains southwest of Bldg. 1	DI-1	3													9.2		100			
	EI-1	3													9.8		110			
Storm drains north of Bldg. 7	F.1	3													8.3	ND			5.6	
	G.1	3													8.9	ND			2	
	H.1	3													8.7	ND			410	
	GH.3	3	ND	ND	ND															
Bldg. 5 floor drain	I1-A	4													8		330		6.1	
	I1-B	4													9.4		170		43	
	I1-C	4													9.2		320		2.8	
	I1-D	4													7.5		350		87	
Bldg. 8 trench drain	J.1.N	6	ND	ND	ND										8.4		110	ND		
	J.1.MID	6	ND	ND	ND										7.7		36	ND		
	J.1.S	5	ND	ND	ND										8.9		510	ND		
Storm drain east of Bldg. 14	K1	3													8.9		45			

TABLE 6
Analytical Results for Closure Samples
Sumps, Drains and Clairfiers

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds(1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2m	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limit			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25			100,000	none	none	none	none	none	
SUMPS																				
Pump sump next to the NW Corner of Bldg 2 and the bleach tank	None	None																		
Polydrum sump, NE corner of BLDG 2	HA-9	1								ND	ND	ND	ND							
Sump east of Bldg 4 and old cooling tower	C.1	3																ND		
Drain sump by Bldg 15	D	7	ND	ND	ND					ND	ND	ND	ND							
Alkane unloading sump	E	None																		
Sump due South of BLDG 4 and North of RR tracks	F	None																		
Sump within Area III, Oleum AGT Containment area	G-1 liquid(2)	4	ND	ND	ND										8.1	1.2	30		ND	
															10.11(2)	30(2)	500(2)	12(2)	790(2)	
Sump east of Bldg. 1 and north of Area II AGTs	B1-H	4.5															330			
Pump sump NW corner Bldg 2 chlorine tank	CT-I	4															46			
Soda Ash Unloading Sump between Bldgs. 4 and 8	JN	9													9.4					
	JS	9													10.2					
Bldg. 5 Spray Dryer and main sump	K	4													9.5				27	
	L	4													10.1				76	
	M	4													8.9				13	
Sump north of Area V, AGTs and adjacent to weigh station	S-N.3		ND	ND	ND										8.2		22	ND		
Sump south of Area V, AGTs.	O-M (3)	5	0.64	10	ND										9.6		90	ND		PCBs 0.08
Drainage Sump for Area V	O-SE (3)	5	ND	ND	ND										8.8		200	ND		ND(0.04)
Sump inside Bldg. 6, NE	SP.A	1	1.8	ND	3.2										8.8		100	26		
Corner	SP.3	3	0.65	11	ND										8.9		180	73		
Sump inside Bldg. 5 Boiler Room	ZZ	3																	81	
Sump inside Bldg. 8, Central next to Oleum Tanks	ZX-1	6													7.8					
	ZX-2	3													7.9					
	ZX-3	3													7.5					
	ZX-4	3													6.6					
Caustic Unloading Sump Due North of Bldg. 6	HA-10	1													11.6					
CLARIFIERS																				

TABLE 1
ANALYTICAL RESULTS for GROUNDWATER SAMPLES from PRECLOSURE and POST-CLOSURE ASSESSMENTS
DIAL CORPORATION, 9300 RAYO AVENUE, SOUTH GATE

Well No. and Elevation (ft-MSL)	Date Sampled	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Petroleum Hydrocarbons (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Chloroform (ug/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	TCE (µg/L)	1,2-DCP (µg/L)	Formaldehyde (mg/L)	pH pH Units	Chloride (mg/L)	Ammonia (NH3) (mg/L)	MBAS (mg/L)
MCL				none	1	150	680	1750	100	5	0.5	5	5	5.5	6.5-7.5	500	45	0.5
MW-1	20-Apr-92	51.46	56.24	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
(107.69)	11-Sep-92	52.00	55.68	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA
	19-Mar-93	50.90	56.79	Water level only														
	30-Sep-93	48.95	57.74	<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	06-Apr-94	46.39	59.30	<0.5	<0.3	<0.4	<0.5	<0.8	<0.5	<0.4	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
	14-Apr-95	46.08	61.61	<0.04	<0.3	<0.4	<0.5	<0.6	<0.5	<0.4	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
	06-Dec-95	44.80	62.89	<0.04	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	05-Mar-96	44.40	63.29	Water level only														
(109.58)	24-Feb-97	44.97	64.61	<0.05 to 0.5 (5)	<0.5	<1	<1	<2	<0.5	<0.5	<1	<1	<0.5	TR<0.025	7.4	220	1.2	0.14
MW-2	20-Apr-92	52.73	52.92	<1.0	NA	NA	NA	NA	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
(105.65)	11-Sep-92	52.60	53.05	<0.5	<5	<5	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA
	19-Mar-93	51.17	54.48	Water level only														
	30-Sep-93	49.84	55.81	<0.05	4	0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	06-Apr-94	47.74	57.91	<0.5	2.5	<0.4	<0.5	<0.8	<0.5	<0.4	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
	14-Apr-95	45.50	60.15	<0.04	1.4	<0.4	<0.5	<0.6	<0.5	<0.4	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
	06-Dec-95	44.32	61.33	<0.04	<10*	<10*	<10*	<20*	<0.5	<10*	<10*	<10*	<10*	NA	NA	NA	NA	NA
	05-Mar-96	43.85	61.80	Water level only														
(108.29)	24-Feb-97	45.12	63.17	<0.05 to 0.5 (5)	<0.5	<1	<1	<2	<0.5	<0.5	<1	<1	<0.5	0.13	7.2	700	1.8	22
MW-3	20-Apr-92	53.80	53.44	NA	NA	NA	NA	NA	<0.5	<0.5	<0.5	26	<0.5	NA	NA	NA	NA	NA
(107.24)	19-Mar-93	53.83	53.41	Water level only														
	19-Mar-93	52.30	54.94	Water level only														
	30-Sep-93	51.06	56.18	Water level only														
	05-Apr-94	49.15	58.09	Water level only														
	14-Apr-95	47.04	60.20	Water level only														
	06-Dec-95	45.85	61.39	Water level only														
	05-Mar-96	45.44	61.80	Water level only														
(109.06)	25-Feb-97	46.02	63.04	<0.05 to 0.5 (5)	<0.5	<1	<1	<2	<0.5	1.3	<1	3.4	<0.5	0.067	7.1	820	2.4	0.17
MW-4	20-Apr-92	52.40	53.99	NA	NA	NA	NA	NA	<0.5	<0.6	0.6	28	<0.5	NA	NA	NA	NA	NA
(106.39)	05-Jun-92	52.59	53.80	Water level only														
	19-Mar-93	51.23	55.18	Water level only														
	30-Sep-93	49.96	56.43	Water level only														
	05-Apr-94	47.95	58.44	Water level only														
	14-Apr-95	45.88	60.51	Water level only														
	06-Dec-95	44.68	61.71	Water level only														
	05-Mar-96	44.21	62.18	Water level only														
(106.39)	24-Feb-97			NO SAMPLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	20-Apr-92	58.00	53.71	NA	NA	NA	NA	NA	<0.5	<5*	<5*	1,400	<5*	NA	NA	NA	NA	NA
(109.71)	05-Jun-92	56.21	53.50	Water level only														
	19-Mar-93	54.95	54.76	Water level only														
	30-Sep-93	53.82	56.09	Water level only														
	06-Apr-94	51.68	58.03	Water level only														
	14-Apr-95	49.52	60.19	Water level only														
	06-Dec-95	48.33	61.38	Water level only														
	05-Mar-96	47.78	61.93	Water level only														
(109.71)	24-Feb-97			NO SAMPLE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-6	11-Sep-92	53.07	53.81	<0.5	5.8	<5	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA
(106.88)	19-Mar-93	51.80	55.08	Water level only														
	30-Sep-93	50.47	56.41	0.1	46	2	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	06-Apr-94	48.54	58.34	<0.5	53	1.6	0.5	0.7	<0.5	0.7	0.7	<0.4	<0.3	NA	NA	NA	NA	NA
	14-Apr-95	48.33	60.55	0.058	27	1.4	<0.5	<0.8	<0.5	0.5	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
	14-Apr-95	46.33	60.55	0.059	23	1.2	<0.5	<0.6	<0.5	0.5	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA

TABLE 1
ANALYTICAL RESULTS for GROUNDWATER SAMPLES from PRECLOSURE and POST-CLOSURE ASSESSMENTS
DIAL CORPORATION, 9300 RAYO AVENUE, SOUTH GATE

Well No. and Elevation (ft-MSL)	Date Sampled	Depth to Water (feet)	Groundwater Elevation (ft-MSL)	Total Petroleum Hydrocarbons (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Xylenes (µg/L)	Chloroform (ug/L)	1,1-DCA (µg/L)	1,2-DCA (µg/L)	TCE (µg/L)	1,2-DCP (µg/L)	Formaldehyde (mg/L)	pH pH Units	Chloride (mg/L)	Ammonia (NH3) (mg/L)	MBAS (mg/L)
MCL				none	1	150	680	1750	100	5	0.5	5	5	5.5	6.5-7.5	500	45	0.5
	06-Dec-95	45.17	81.71	0.11	17	<0.5	<0.5	<1.0	<0.5	0.5	0.6	<0.5	<0.5	NA	NA	NA	NA	NA
	05-Mar-96	44.60	82.08	Water level only														
(107.84)	25-Feb-97	44.48	83.46	<0.05 to 0.5 (5)	1.8	<1	<1	<2	<0.5	0.88	<1	<1	<0.5	0.224	6.7	3200	5.8	1.7
(Duplicate)	25-Feb-97	44.48	83.46	<0.05 to 0.5 (5)	2.8	<1	<1	<2	<0.5	0.91	<1	<1	<0.5	0.144	7.0	3300	4.8	3.8
MW-7	11-Sep-92	53.17	53.84	<0.5	10	5.8	<5	<5	<5	<5	<5	<5	<5	NA	NA	NA	NA	NA
(107.01)	19-Mar-93	52.11	54.90	Water level only														
	30-Sep-93	50.86	56.15	0.3	120	3	2	3	<0.5	1.3	0.6	0.6	2.0	NA	NA	NA	NA	NA
	06-Apr-94[1]	48.70	58.31	0.6	230	5	4.8	3.7	2.3	2.7	1.1	1.8	1.8	NA	NA	NA	NA	NA
	14-Apr-95[2]	46.48	60.53	NA	70	3.9	1.3	2.0	0.4(J)	2.1	<0.3	1.8	1.4	NA	NA	NA	NA	NA
	06-Dec-95[2]	45.22	61.79	0.33	85	2.7	2	1.9	<0.5	1.7	1.1	0.9	1.2	NA	NA	NA	NA	NA
	05-Mar-96	44.73	62.28	Water level only														
(106.26)	25-Feb-97	44.72	63.54	0.55 (C4-C12)	0.68	<1	<1	2.4	1.7	1.5	<1	<1	<0.5	0.157	6.6	9400	13	0.14
MW-11 (110.43)	25-Feb-97	47.08	63.35	<0.05 to 0.5 (5)	<0.5	<1	<1	<2	<0.5	0.68	<1	<1	<0.5	0.149	7.0	1600	2.3	0.2
MW-12 (111.21)	24-Feb-97	47.89	63.32	<0.05 to 0.5 (5)	<0.5	<1	<1	<2	<0.5	3.3	<1	16	<0.5	<0.02	7.5	98	2.2	0.5
MW-13 (110.76)	25-Feb-97	47.23	63.53	<0.05 to 0.5 (5)	0.87	<1	<1	<2	<0.5	3.3	<1	<1	<0.5	<0.03	7.3	1900	2.8	4.2
Trip	14-Apr-95	--	--	0.26	<0.3	<0.4	<0.5	<0.8	<0.5	<0.4	<0.3	<0.4	<0.3	NA	NA	NA	NA	NA
Blank	06-Dec-95	--	--	<0.04	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
	24-Feb-97	--	--	NA	<0.5	<1	<1	<2	<0.5	<0.5	<1	<1	0.81	NA	NA	NA	NA	NA
Equip	06-Dec-95	--	--	<0.04	<0.5	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	NA	NA	NA	NA	NA
Blank	24-Feb-97	--	--	NA	<0.5	<1	<1	<2	<0.5	<0.5	<1	<1	<0.5	NA	NA	NA	NA	NA

NOTES:

Samples Collected prior to February 24 and 25, 1997 were analyzed by Golden State/CAS Laboratories Inc , Canoga Park, California
Samples collected on February 24 and 25, 1997 were analyzed by CAPCO Analytical Services, Incorporated, Ventura, California
MCL = Maximum Contaminant Level (MCL) listed in 22 CCR, Section 64444 5 Table 5 "Maximum Contaminant Levels for Organic Constituents "
Results in bold indicate samples with concentrations over MCLs.

NA = Not analyzed
-- = Not applicable
* = Method reporting limit elevated because the sample required diluting
(109.58) = Resurvey of well head elevations after site demolition (2/97)

(1) Other VOCs by EPA Method 8260 detected were cis-1,2-Dichloroethene (1 0 ug/L)
(2) Other VOCs by EPA Method 8260 detected were, cis-1,2-Dichloroethylene (1.0), Acetone (14ft), Isopropylbenzene (0 3ft) and Naphtalene (0 5)
(3) Chloromethane (1.7) was detected in the Method Blank for sampling date 14-Apr-95.
(4) Cis-1,1 dichloroethene (cis 1,1-DCE) was detected in the groundwater sample collected from well MW-7 at a concentration of 1 0ug/L on 12/6/95
(5) Total Petroleum Hydrocarbon practical quantitation limit range for C4 through C23+

CERTIFIED ANALYTICAL LABORATORY REPORTS ARE INCLUDED IN APPENDIX C

TABLE 2
CLOSURE SAMPLING SCHEDULE
Sumps, Drains and Clarifiers

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes											Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8010	Form. NASCI 487	PCBs Method 8080	pH Method 9045	Metals Method 6/7000	Total Cr. Method 7190	Phosphate Method 300 1	Chloride Method 300.1	Phenol Sample Screen			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Form. Method 8315	pH Method 9045	Phosphate Method 365.2	Chloride Method 300 1	Ammonia Method 350.2	MBAS Method 425 1	
SUMPS																								
Pump sump next to the NW Corner of Bldg 2 and the bleach tank.	B-3	1	X					X						NONE										1
Polydrum sump, NE corner of BLDG 2	B-4 and S-2	2	X		X	X		X					X	B, HA-9	1			X						3
Sump east of Bldg 4 and old cooling tower	B-11	1						X		X				C.1	1							X		2
Drain sump by Bldg. 15	B-13	1	X			X								D	1	X		X						2
Alkane unloading sump	B-15, B-22, B-23 B-24, B-41, B-42 B-53 and H-1	41	X											NONE										41
Sump due South of BLDG 4 and North of RR tracks	B-18	2	X					X			X			NONE										2
Sump within Area III, Oleum AGT Containment area	B-17	1						X						G-1	1				X	X	X		X	2
Sump east of Bldg 1 and north of Area II AGTs	NONE													B1-H	1						X			1
Pump sump NW corner Bldg 2 chlorine tank	NONE													CT-I	1						X			1
Soda Ash Unloading Sump between Bldgs 4 and 8	S-15	1						X			X	X		JN and JS	2				X					3
Bldg. 5 Spray Dryer and main sump	NONE													K,L, and M	3				X				X	3
Sump north of Area V, AGTs and adjacent to weigh station	S-12	1			X	X								S-N.3	1	X			X		X	X		2
Sump south of Area V, AGTs Drainage Sump for Area V	S-11	1	X				X							O-M and O-SE	2	X (2)			X		X	X		3
Sump inside Bldg 8, NE Corner	NONE													SP.A and SP.3	2	X			X		X	X		2
Sump inside Bldg 5 Boiler Room	NONE													ZZ	1								X	1
Sump inside Bldg. 8, Central next to Oleum Tanks	S-10	1	X					X			X	X		ZX-1, ZX-2, ZX-3 ZX-4	4				X					5
Caustic Unloading Sump Due North of Bldg 6	S-7	1												HA-10	1									2

TABLE 2
CLOSURE SAMPLING SCHEDULE
Sumps, Drains and Clarifiers

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes											Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8010	Form. NASCI 487	PCBs Method 8080	pH Method 9045	Metals Method 6/7000	Total Cr. Method 7190	Phosphate Method 300 1	Chloride Method 300 1	Phenol Sample Screen			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Form. Method 8315	pH Method 9045	Phosphate Method 365 2	Chloride Method 300 1	Ammonia Method 350 2	MBAS Method 425 1	
CLARIFIERS																								
Clarifier between Bldgs 2 and 14	B-1	1	X		X	X	X	X		X	X	X		Q-E and Q-W	2			X						3
Main Clarifier preceeding sewer discharge, south gate	B-9	1	X					X						R1 and R2	2	X		X		X	X	X		X	3
Clarifier near storm water retention tanks	B-14	1	X		X		X	X						S and Sw	2	X		X		X	X	X		X	3
Clarifier southeast corner of Bldg 15	B-13	1	X			X								T	2	X		X							3
Clarifier east of Bldg. 8	NONE													U-1, U-2, U-3	3	X				X		X	X		3
DRAINS																								
Trench drain between Bldgs 1 and 14	B-2	1						X		X	X	X		V-N, V-NM, V-SM V-S, and VD.3	5			X	X			X	X		6
Drain east of Area V, AGTs and the Formaldehyde tanks	B-25	1	X		X	X	X	X						NONE											1
Sump east of Bldg 4 and old cooling tower	B-11	1						X		X				X-1.3	1								X		2
Storm drain near south gate	NONE													Y.3	1			X		X					1
Storm drains outside of Bldg 6	NONE													Z.3,A1,B1,and C1	4	X				X		X		X	4
Storm drains southwest of Bldg 1	NONE													DI-1 and EI-1	2					X		X			2
Storm drains north of Bldg 7	NONE													F1,G1,H1 and GH.3	4					X	X			X	4
Bldg 5 floor drain	NONE													I1-A, I1-B, I1-C I1-D	4					X		X		X	4
Bldg 8 trench drain	NONE													J1-N, J1-M, J1-S	3	X				X		X	X		3
Storm drain east of Bldg 14	NONE													K1	1					X		X			1
CLOSURE EXCAVATION STOCKPLIES																								
Clarifier Between Bldg 2 and 14 (Samples QE and QW)	NONE													K-1,K-2,K-3,K-4 (3) (composite)	1										1
Main Clarifier preceeding	NONE													R-SP 1, 2, 3, 4 (3)	1	X		X		X	X			X	1

TABLE 2
CLOSURE SAMPLING SCHEDULE
Sumps, Drains and Clarifiers

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes												Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC	BTEX	VOCs	Form.	PCBs	pH	Metals	Total Cr.	Phosphate	Chloride	Phenol				TPH-FC	BTEX	VOCs	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	
			Method 8015FC	Method 8020	Method 8010	NASCI 487	Method 8080	Method 9045	Method 6/7000	Method 7190	Method 300.1	Method 300.1	Sample Screen				Method 8015FC	Method 8020	Method 8260	Method 8315	Method 9045	Method 365.2	Method 300.1	Method 350.2	Method 425.1	
sewer discharge, south gate (Samples R-1 and R-2)															(composite)										
Sump inside Bldg. 8 Central next to Oleum Tanks (Closure Sample ZX)	NONE														ZX-SP-1	1					X				1
Sump within Area III, Oleum AGT Containment area (Closure Sample G)	NONE														G-SP-1	1					X				1
	PHASE II,III AND IV TOTALS	61	54		6	7	4	15	1	4	6	4	2		CLOSURE TOTALS	62	23		17	5	44	10	33	18	22	123

NOTES

Refer to Plates 1 and 2 for sample locations
ALL Methods shown are U S. EPA Methods unless otherwise listed

TPH-FC = Total Petroleum Hydrocarbons, Fuel Characterization
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
VOCs = Halogenated Volatile Organic Compounds
Form = Formaldehyde
PCBs = Polychlorinated Biphenyls

Metals = 22 CCR Metals
Total Cr = Total Chromium
Phenol = Phenol phthalein
MBAS = Methylene Blue Active Substances

(1) Includes Phase II, III and IV assessment and the Closure samples collected below the sumps, drains and clarifiers
(2) Sample additonally analyzed for PCBs by U.S EPA Method 8080
(3) Stockpile samples from remedial excavation activites were additionally analyzed for 22 CCR metals and Total Recoverable Petroleum Hdyrocarbons (TRPH), by U S EPA Methods 6000/7000 series and 415.1

TABLE 3
CLOSURE SAMPLING SCHEDULE
Underground- and Above-Ground Tanks and Areas of Concern

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes											Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8010	Form. NASCI 487	PCBs Method 8080	pH Method 9045	Metals Method 6/7000	Total Cr. Method 7190	Phosphate Method 300.1	Chloride 300 1	phthalein Sample Screen			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Form. Method 8315	pH Method 9045	Phosphate Method 365 2	Chloride Method 300 1	Ammonia Method 350 2	MBAS Method 425 1	
Underground Tanks																								
Former Diesel Tank next to Firestone Blvd (10,000 gal)	B-6	1	X		X									NONE										1
Former Alcohol Storage Tank south of Bldg 15. (12,000 gal)	B-12	1	X											NONE										1
Former 100-gal Fuel Storage Tank below the 150,000 gallon water tank	S-5	1						X						HA-1	1	X	X							2
Former #2 Fuel Oil Tank below the SW corner of Bldg 8 (4,200 gal)	B-16, B-29, B-43	20	X	X										1A, 1B, North South, East, West	6	X	X							26
Former Fuel (gasoline) Tanks adjacent to the Old Laboratory and Garage (10,000 and 550 gal)	B-5 ,B-26, B-27, B-28 B-44, B-45, B-46, B-47, B-48, B-49, B50 H-44-1,H-46-1	103	X		X									NONE (Post-Closure Assessment)										103
Former Diesel Tank, South-eastern corner of the Site (10,000 gal)	B-52	5	X											NONE										5
Former Brine Tank between RR tracks and west of Caustic Unloading Area	B-8	1						X						BT-A and BT-B	2	X				X	X	X		3
Former Acid Tank Containment, west of Bldg 8	B-17	1						X						B-1,B-2,B-3,B-4 S-1,S-2,S-3,S-4 S-5	9					X				10
ABOVE-GROUND TANKS																								
AREA I - "Chloramide System" Tanks east of Building 1 (Tanks 1-5, Plate 2)	B-2	1						X		X	X	X		AI-A and AI-B	2							X		3
AREA II - "Raw Material Storage" Tanks west of Bldg 8 (Tanks 9 -15, Plate 2)	S-14	1						X		X				AII-A and AII-B	2					X			X	3
AREA III - Oleum Tanks west of Bldg 8, (Tanks 7 and 8, Plate 2)	B-17	1						X						AIII-A and AIII-B	2					X				3
REA IV - "Sulfonation Area", inside Bldg 8, (Tanks 17-28, Plate 2)	S-9 and S-10	2	X					X			X	X		AIV-A, AIV-B, AIV-C, AIV-D AIV-E, AIV-F	6	X				X		X		8

TABLE 3
CLOSURE SAMPLING SCHEDULE
Underground- and Above-Ground Tanks and Areas of Concern

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes											Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8010	Form. NASCI 487	PCBs Method 8080	pH Method 9045	Metals 6/7000	Total Cr. Method 7190	Phosphate Method 300.1	Chloride 300.1	phthalein Sample Screen			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Form. Method 8315	pH Method 9045	Phosphate Method 365.2	Chloride Method 300.1	Ammonia Method 350.2	MBAS Method 425.1	
AREA V - "Detergent Area", Above ground tank farm east of Bldg 8 (Tanks 29 -46, Plate 2)	S-13	1						X			X	X		AV-A, AV-B, AV-C AV-D, AV-E, AV-F	6	X			X	X		X	X	X	7
AREA VI - "Silo Stroage", east of Bldg 5 (Tanks 51- 56, Plate 2)	None													AVI-A and AVI-B	2					X		X			2
AREA VII - "Product Stroage" inside Bldg 5 "Spray Dryer", (Tanks 57 - 70, Plate 2)	None													AVII-A, AVII-B AVII-C, AVII-D AVII-E	5									X	5
AREA VIII - "Stormwater Retention Area", SE corner of the Site. (Tanks 47 - 50, Plate 2)	None													AVIII-N, AVIII-NM AVIII-MS, AVIII-S	4	X	X	X		X	X	X		X	4
Former Fuel Oil and Alkane Oil Tanks west of "Storm-ter Retention Area", (Tanks 0223 and 0224)	B-10	1	X											HA-7 and HA-8	2	X									3
Former Cooling Tower west of the central water tank and Bldg 4 (18,000 gal)	S-6	1						X		X				NONE											1
Former Caustic Tanks west Bldg. 4	S-4	1						X						NONE											1
Former Chlorine Tanks inside Bldg 3	S-7	1						X			X	X		NONE											1
AREAS of CONCERN or NEEDING ADDITIONAL ASSESSMENT																									
Lube Oil Storage Area inside Bldg 6	NONE													HA-2	1	X									1
Oil Stained Area South Wall Bldg 6	NONE													HA-3 and HA-4	2	X									2
Oil Stained Area South Wall SE corner Bldg 6	NONE													HA-5	1	X									1
Oil Stained Area inside old Compressor Room SE mer Bldg 6	NONE													HA-6	1	X									1
Equipment Cleaning Pad north side of Building 14 and	S-1	1	X		X		X							None											1

TABLE 3
CLOSURE SAMPLING SCHEDULE
Underground- and Above-Ground Tanks and Areas of Concern

LOCATION	Phase II, III and IV Assessment Sampling Points	Number of Soil Samples Analyzed Phase II -IV Assessments	Phase II, III and IV Assessment Analytes											Closure Sampling Points	Number of Soil Samples Analyzed for the Closure Program	Closure Program Analytes									Assessment and Closure Samples Analyzed (1) (total)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8010	Form. NASCI 487	PCBs Method 8080	pH Method 9045	Metals Method 6/7000	Total Cr. Method 7190	Phosphate Method 300 1	Chloride Method 300 1	phthalein Sample Screen			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Form. Method 8315	pH Method 9045	Phosphate Method 365.2	Chloride Method 300 1	Ammonia Method 350.2	MBAS Method 425.1	
the adjacent Clarifier																								
Drum Fluid Dispensing Area NW Corner of Bldg 2, Lab	S-2	1	X											HA-1	1	X	X							2
Maintenance Area inside Bldg 2 Lab and garage	S-9, B-30, B-31, B-32	10	X		X				X					None										10
Oil Compressor outside Bldg 7	S-8	1	X											None										1
CLOSURE and EXCAVATION STOCKPILES														Note: stockpile samplss are composites										
AREA V Soil Stockpiles from closure of Sumps within the AGT containment (Closure samples AV-A through AV-F)	NONE													N-1,N-2 (2),NSP	2	X			X	X		X	X	X	2
														E-1,E-2,E-3 (2),ESP	2	X			X	X		X	X	X	2
														W-1,W-2,W-3,MSP	2	X			X	X		X	X	X	2
														S-1,S-1,S-3,S-4 (2)	1										1
														SSP	1	X			X	X		X	X	X	1
Onne Tank Soil Stockpils (Closure Samples BT-A and BT-B)	NONE													BT-1,BT-2,BT-3 BT-4	4	X	X								4
Acid Containment Area (Closure and Remedial Excavation Samples B-1 through B-5 and S-1 through S-5)	NONE													ST-1 and ST-2	2					X					2
	PHASE II, III and IV TOTALS	156	146	20	115		1	12	10	3	5	5		CLOSURE TOTALS	69	44	15	4	13	42	6	29	15	22	225

NOTES

Refer to Plates 1 and 2 for sample locations
ALL Methods shown are U S EPA Methods unless otherwise listed

TPH-FC = Total Petroleum Hydrocarbons, Fuel Charaterization
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
VOCs = Haogenated Volatile Organic Compounds
Form = Formaldehyde
PCBs = Polychlorinated Biphenyls

Metals = 22 CCR Metals, Title 22 California Code of Regulations Chapter 2 Article 11
Total Cr = Total Chromium
pthalein = Phenol phthalein
MBAS = Methylene Blue Active Substances

(1) Includes Phase II, III and IV assessment and Closure samples collected below aboveground and underground storage tanks and areas of concern.
(2) Stockpile samples from remedial excavation activites were additionally analyzed for 22 CCR metals and Total Recoverable Petroleum Hdyrocarbons (TRPH), by U S EPA Methods 6000/7000 series and 418.1

TABLE 4
POST-CLOSURE ASSESSMENT SAMPING and ANALYSIS SCHEDULE
DIAL CORPORATION, SOUTH GATE FACILITY

LOCATION	Post Closure Exploratory Borings	Number of Soil Samples Analyzed for the Post-Closure Program	Post-Closure Program Analytes									Total Post-Closure Assessment Samples Analyzed (1)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Formaldehyde Method 8315	pH Method 9045	Phosphate Method 365.2	Chloride Method 300.1	Ammonia Method 350.2	MBAS Method 425.1	
UNDERGROUND TANKS												
Closure borings for Old Garage/Lab	CB-1	9	X		X							9
SVE . Former 10,000 and 550 gallon	CB-2	9	X		X							9
storage tanks (see Plate 3)	CB-3	9	X		X							9
ABOVEGROUND TANKS												
AREA V - "Detergent Area",	EB-14	4				X				X	X	4
Aboveground Tank Farm east	EB-15	4				X				X	X	4
of Bldg. 8 (Tanks 29 -46,	EB-16	4				X				X	X	4
Plate 3).	EB-17	4				X				X	X	4
	EB-18	4				X				X	X	4
Former Fuel Oil and Alkylate Storage	EB-12	7	X									7
Tanks west of the Stormwater	EB-13	8	X									8
Retention Area, tanks 0223 and 0224												
See Plate 3												
CLARIFIERS												
Clarifier between Building 2 and 14	EB-8	9			X							9
Closure Samples Q-E and Q-W	EB-9	9			X							9
conatined detectable concentrations	EB-10	9			X							9
of chloroform and methylene	EB-11	9			X							9
chloride (see Plate3)												
Main Clarifier at the South	EB-1	9	X		X							9
Gate Preceeding the Sewer												
Discharge												

TABLE 4
POST-CLOSURE ASSESSMENT SAMPING and ANALYSIS SCHEDULE
DIAL CORPORATION, SOUTH GATE FACILITY

LOCATION	Post Closure Exploratory Borings	Number of Soil Samples Analyzed for the Post-Closure Program	Post-Closure Program Analytes									Total Post-Closure Assessment Samples Analyzed (1)
			TPH-FC Method 8015FC	BTEX Method 8020	VOCs Method 8260	Formaldehyde Method 8315	pH Method 9045	Phosphate Method 365.2	Chloride Method 300.1	Ammonia Method 350.2	MBAS Method 425.1	
AREAS of CONCERN or NEEDING ADDITIONAL ASSESSMENT												
Lube Oil Storage Area inside Building	EB-4	4	X									4
6. Elevated TPH concetnrations	EB-5	2	X									2
reported in the soil sample from HA-2.	EB-6	2	X									2
See Plate 3 for sample locations	EB-7	2	X									2
POST-CLOSURE INVESTIGATIVE DERIVED WASTE												
Soil Stockpiled derived from the	MW-11	1			X							1
installation of monitoring wells	MW-12	1			X							1
(MW-11, MW-12 and MW-13)	MW-13	1			X							1
		TOTAL NUMBER of Analyses	61	0	75	20	0	0	0	20	20	120

NOTES

Refer to PLATE 3 for sample locations

ALL Methods shown are U.S. EPA Methods unless otherwise listed

TPH-FC = Total Petroleum Hydrocarbons, Fuel Characterization

BTEX = Benzene, Toluene, Ethylbenzene and Xylenes.

VOCs = Halogenated Volatile Organic Compounds

MBAS = Methylene Blue Active Substances

TABLE 5
Screening Level Criteria and PRGs for VOCs and Petroleum Hydrocarbons

VOLATILE ORGANIC COMPOUNDS AND OTHER COCS

Constituent of Concern		Chloroform	Methylene Chloride	1,2,4 TMB ***	1,3,5 TMB ***	Formaldehyde *	TCE	1,1-DCA	Dichloro-difluoromethane *	Napthalene****	Ammonia **	Chloride **	MBAS **
PRG (mg/kg)		1.1	25	none	none	100,000	17	3,900	350	none	none	none	none
MCL (mg/L)		0.1	0.005	1.75	1.75	5.5	0.005	0.005	0.39	0.02	45	250	0.5
Depth (feet)	Distance above Groundwater (feet)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)
5	40	1 45	0 07	25.38	25 38	79 75	0 07	0 07	5 65	0 79	653	3625	7 3
10	35	1 26	0 06	22 09	22 09	69 44	0 06	0 06	4 92	0 25	568	3156	6 3
15	30	1 08	0 05	18 81	18.81	59 13	0 05	0 05	4 19	0 22	484	2688	5 4
20	25	0 89	0 04	15 53	15 53	48 81	0 04	0 04	3 46	0 18	399	2219	4 4
25	20	0 70	0 04	12 25	12 25	38.50	0 04	0 04	2 73	0 14	315	1750	3.5
30	15	0.55	0.03	9 63	9 63	30 25	0 03	0 03	2 15	0 11	248	1375	2 8
35	10	0 40	0 02	7 00	7 00	22 00	0 02	0 02	1 56	0 08	180	1000	2 0
40	5	0 40	0 02	7 00	7.00	22 00	0 02	0 02	1 56	0 08	180	1000	2 0
45	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater

PETROLEUM HYDROCARBONS AND BTEX

Constituent of Concern		TPH C4 to C12	TPH C13 to C22	TPH C23+	Benzene	Toluene	Ethyl-Benzene	Xylenes
PRG (mg/kg)		none	none	none	3.2	2,800	990	690
MCL (mg/L)		none	none	none	0.001	0.1	0.68	1.75
Depth (feet)	Distance above Groundwater (feet)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)	Screening Level Criteria (mg/kg)
5	40	500	1000	10,000	0 081	4 200	16 567	45 417
10	35	500	1000	10,000	0 067	3 475	13 639	37 344
15	30	500	1000	10,000	0 054	2 750	10 706	29 271
20	25	500	1000	10,000	0 041	2 025	7 779	21 198
25	20	500	1000	10,000	0 028	1 300	4.850	13 125
30	15	100	100	1,000	0 001	0 10	0 68	1 75
35	10	100	100	1,000	0 001	0 10	0 68	1 75
40	5	100	100	1,000	0 001	0.10	0 68	1 75
45	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater

* The value for Formaldehyde and Dichlorodifluoromethane is the PRG for tap water

** The values for MBAS, ammonia and chloride are secondary MCLs, ammonia is shown as NO3

*** The MCL for 1,2,4- and 1,3,5-TMB was assumed to be the same as xylenes based on structural similarity

**** An MCL or PRG has not been published for Napthalene To estimate screening level criteria the Suggest No-Adverse Response Level or SNARL was used A SNARL is a health advisory published by EPA (March, 1986, September, 1987)

PRG = EPA Region IX, Preliminary Remediation Goal, (September, 1995)

MCL = State of California, Maximum Contaminant Level for a drinking water resource

TABLE 7
Analytical Results for Closure Samples
Underground and Aboveground Storage Tanks and Areas of Concern

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)										
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 6315	Method 9045	Method 365.2	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25	none	none	100,000	none	none	none	none	none	
AREA II - "Raw Material Storage" Tanks west of Bldg 8 (Tanks 9 -16, Plate 1)	AII-A	3													8.5			ND		
	AII-B	3													7.4			ND		
AREA III - Oleum Tanks west of Bldg. 8, (Tanks 7 and 8, Plate 1)	AIII-A	3													8.1					
	AIII-B	3													8.3					
AREA IV - "Sulfonation Area", inside Bldg. 8, (Tanks 17-28, Plate 1)	AIV-A	4	ND	ND	ND										7.2		77			
	AIV-B	4	ND	ND	ND										8.6		110			
	AIV-C	4	ND	610	ND										7.2		78			
	AIV-D	4	ND	ND	ND										7.7		2000			
	AIV-E	4	ND	67	ND										7.3		340			
	AIV-F	4	ND	ND	ND										7.4		240			
AREA V - "Detergent Area", Above ground tank farm east of Bldg. 8 (Tanks 29 -46, Plate 1) Samples collected below sumps and drains in containment area	AV-A	5	ND	630	56									4.4	7.6		33	470	1600	
	AV-B	4	ND	120	27									50.1	8.6		120		410	
	AV-C	5	ND	ND	ND									ND	7.9		2000		9.9	
	AV-D	5	ND	ND	ND									ND	9.6		250		6.5	
	AV-E	5	ND	410	ND									10.1	8		50	120	1.3	
	AV-F	5	ND	ND	ND									2.9	9.3		310		23	
AREA VI - "Silo Stroage", east of Bldg 5, (Tanks 51- 56, Plate 1)	AVI-A	3													7.9		66			
	AVI-B	3													9.3		280			
AREA VII - "Product Stroage" inside Bldg 5 "Spray Dryer", (Tanks 57 - 70, Plate 1)	AVII-A	3																	37	
	AVII-B	3																	40	
	AVII-C	3																	250	
	AVII-D	3																	85	
	AVII-E	3																	9.2	
AREA VIII - "Stormwater Retention Area", SE corner of the Site, (Tanks 47 - 50, Plate 1)	AVIII-N	4	ND	400	ND	ND	ND	ND	ND	ND	ND	ND	ND		9.3	2.2	150		290	
	AVIII-NM	4	ND	460	ND	ND	ND	ND	ND	ND	ND	ND	ND		8.7	2.8	230		160	
	AVIII-MS	4	ND	480	ND	ND	ND	ND	ND	ND	ND	ND	ND		9.2	1.8	130		170	
	AVIII-S	4	ND	930	ND	ND	ND	ND	ND	ND	ND	ND	ND		9.7	6.9	300		270	
Former Fuel Oil and Alkane Oil Tanks west of "Storm-water Retention Area", (Tanks 0223 and 0224)	HA-7	6	ND	3000	ND															
	HA-8	6	ND	17	ND															
Former Cooling Tower west of the central water tank and Bldg 4 (18,000 gal.)	None																			
Former Caustic Tanks west Bldg. 4	None																			

TABLE 7
Analytical Results for Closure Samples
Underground and Aboveground Storage Tanks and Areas of Concern

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)										
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	690	990	1.1	25	none	none	100,000	none	none	none	none	none	
Former Chlorine Tanks inside Bldg. 3	None																			
AREAS of CONCERN or NEEDING ADDITIONAL ASSESSMENT																				
Lube Oil Storage Area inside Bldg 6	HA-2	3	0.5	3200	5500															9300 (TRPH)
Oil Stained Area South Wall Bldg 6	HA-3	4	ND	ND	ND															
	HA-4	4	ND	ND	ND															
Oil Stained Area South Wall SE corner Bldg 6	HA-5	3.5	ND	ND	210															690 (TRPH)
Oil Stained Area inside old Compressor Room SE Corner Bldg 6	HA-6	3.5																		31 (TRPH)
Equipment Cleaning Pad north side of Building 14 and the adjacent Clarifier	None																			
Drum Fluid Dispensing Area NE Corner of Bldg 2, Lab	HA-9	5	ND	ND	ND	ND	ND	ND	ND											
Maintenance Area inside Bldg 2 Lab and garage	None																			
Oil Compressor outside Bldg 7	None																			
Area indentified outside Bldg 4 during demolition with a noticable "Diesel Odor" in the surface soils	Bldg 4A	3	0.55	13	ND															
CLOSURE and EXCAVATION STOCKPILES (3)																				(TRPH)
AREA V Soil Stockpiles from closure of Sumps within the AGT containment (Closure samples AV-A through AV-F)	N-1,2 (3)	2(2)																		320
	NSP	2(2)	0.86	200	91									6.4	8.4	320	87	25		
	E-1,2,3 (3)	2(2)																		45
	ESP	2(2)	ND	97	22									3.6	8.5	39	ND	71		
	W-1,2,3 (3)	2(2)																		310
	MSP	2(2)	ND	18	23									10.2	8.9	600		8.7		

TABLE 7
Analytical Results for Closure Samples
Underground and Aboveground Storage Tanks and Areas of Concern

LOCATION	Closure Sampling Points	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	1,2,4 TMB	1,3,5 TMB	Form.	pH	Phosphate	Chloride	Ammonia	MBAS	Other Analytes
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 9045	Method 365.2	Method 300.1	Method 350.2m	Method 425.1m	Method Various
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0.5	10	10	0.005	0.005	0.005	0.01	0.005	0.01	0.005	0.005	2		0.5	10	10	1	Various
PRG			none	none	none	3.2	2800	890	990	1.1	25	none	none	100,000	none	none	none	none	none	
	S-1,2,3,4 (3)	2(2)																		190
	SSP	2(2)	ND	ND	ND									11	9.6		250	92	3.7	
Brine Tank Soil Stockpiles (Closure Samples BT-A and BT-B)	BT-1	2(2)	ND	39	ND	ND	ND	ND	ND											
	BT-2	2(2)	ND	110	ND	ND	ND	ND	ND											
	BT-3	2(2)	ND	140	220	ND	ND	ND	ND											
	BT-4	2(2)	ND	22	47	ND	ND	ND	ND											
Stockpile samples from material generated as part of removal actions in the acid containment area (closure samples B-1 through B-5, S-1 through S-4)	ST-1	2(2)													7.6					
	ST-2	2(2)													7.2					

NOTES

Refer to PLATE 2 for sample locations.
Certified Analytical Laboratory Reports and Chain-of-Custody Documentation are provided in Appendix B
ALL Methods shown are U.S. EPA Methods unless otherwise listed

ND(<50) = Not Detected at an elevated method detection limit shown in parenthesis. Elevated limits due to matrix interfearences
None = No Sample Collected for this Waste Management Unit. Refer to prior Phase II thorugh Phase IV investigations
PRG = Preliminary Remediation Goal, U.S. EPA Region IX, September, 1995, for industrial soils

TPH-FC = Total Petroleum Hydrocarbons, Fuel Charatenzation
1,2,4 TMB = 1,2,4 Trimethylbenzene
1,3,5 TMB = 1,3,5 Trimethylbenzene
Form = Formaldehyde
MBAS = Methylene Blue Active Substances

(1) Volatile Organic Compounds reported in the soil samples collected and analyzed by EPA method 8260. Remaining VOCs from EPA 8260 Analysis were not reported above method detection limits
(2) Composite stockpile samples from remedial excavation activites were additionally analyzed for 22 CCR metals and Total Recoverable Petroleum Hdyrocarbons (TRPH), by U.S EPA Methods 6010/7000 series and 418.1.
(3) Soil samples were collected approximately 2 feet into the stockpile.
(4) Sediment sample collected from material accumulated in the Brine Tank chambers. Additional analysis included CCR Title 22 Metals. All metal concentrations were within TTLC CCR Title 22 Criteria.

TABLE 8
Analytical Results for Assessment Samples
Post-Closure Assessment Program

LOCATION	Post Closure Exploratory Soil Borings	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	Dichloro difluromethane	1,1-DCA	TCE	PCE	Naptha lene	1,2,4 TMB	1,3,5 TMB	Form.	Ammonia	MBAS
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 350 2m	Method 425 1m
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0 5	10	10	0 005	0 005	0 005	0 01	0 01	0 01	0 002	0 005	0 003	0 003	0 02	0 005	0 005	2	10	1
PRG			none	none	none	3 2	2800	690	990	1 1	25	350	3,900	17	25	none	none	none	100,000	none	none
UNDERGROUND TANKS																					
Former Fuel (gasoline)	CB-1	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Tanks adjacent to the Old		10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Laboratory and Garage		15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
(10,000 and 550 gal)		20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Confirmatory Soil Borings		30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0031	0.0042	ND	ND	ND			
		40	ND	ND	ND	0.0078	ND	0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45	ND	ND	ND	0.08	0.033	0.042	0.18	ND	ND	ND	ND	ND	ND	ND	0.011	0.022			
	CB-2	5	0.56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		15	0.82	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		20	6.7	ND	ND	0.068	0.6	0.55	1.2	ND	ND	ND	ND	ND	ND	0.83	0.73	ND			
		25	2	ND	ND	ND	0.03	ND	0.14	ND	ND	ND	ND	ND	ND	ND	0.068	ND			
		30	1.5	ND	ND	0.13	0.2	0.02	0.26	ND	ND	ND	ND	ND	ND	ND	0.059	ND			
		35	ND	ND	ND	ND	ND	0.021	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40	ND	ND	ND	0.0063	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45	0.74	ND	ND	0.021	0.005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
	CB-3	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		20	4200	ND	ND	ND(<20)	ND(<20)	28	200	ND(<50)	ND(<50)	ND(<10)	ND(<20)	ND(<20)	ND(<20)	ND(<20)	ND(<20)	ND(<20)			
		25	210	ND	ND	ND	0.089	0.11	0.38	ND	ND	ND	ND	ND	ND	0.55	0.48	0.28			
		30	15	ND	ND	1.1	2.9	0.34	2.5	ND	ND	ND	ND	ND	ND	ND	0.83	ND			
		35	0.58	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40	1.8	ND	ND	0.0055	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	0.011	ND			
		45	2	ND	ND	0.22	0.19	0.044	0.18	ND	ND	ND	ND	ND	ND	ND	ND	0.0064			
ABOVEGROUND TANKS																					
AREA V - "Detergent Area",	AV-A	5	ND	630	56														4.4	470	1600
Above ground tank farm east	AV-B	4	ND	120	27														50.1		410
of Bldg. 8 (Tanks 29 -46,	AV-C	5	ND	ND	ND														ND		9.9
Plate 1) Closure Samples collected	AV-D	5	ND	ND	ND														ND		6.5
below sumps and drains in	AV-E	5	ND	410	ND														10.1	120	1.3
containment area (see Drawing 2)	AV-F	5	ND	ND	ND														2.9		23
	EB-14	5																	4.8	ND	1.9
		10																	23.6	ND	ND
		15																	ND	ND	ND
		20																	6.7	ND	ND
	EB-15	5																	TR<3	ND	12
		10																	14.3	ND	ND
		15																	TR<3.6	ND	ND
		20																	ND	ND	ND

TABLE 8
Analytical Results for Assessment Samples
Post-Closure Assessment Program

LOCATION	Post Closure Exploratory Soil Borings	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	Dichloro difluromethane	1,1-DCA	TCE	PCE	Naptha lene	1,2,4 TMB	1,3,5 TMB	Form.	Ammonia	MBAS
			Method 8015FC (mg/kg)	Method 8015FC (mg/kg)	Method 8015FC (mg/kg)	Method 8020 (mg/kg)	Method 8020 (mg/kg)	Method 8020 (mg/kg)	Method 8020 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8260 (mg/kg)	Method 8315 (mg/kg)	Method 350 2m (mg/kg)	Method 425 1m (mg/kg)
Practical Quantitation Limits			0 5	10	10	0.005	0.005	0 005	0 01	0 01	0 01	0 002	0.005	0 003	0 003	0 02	0 005	0.005	2	10	1
PRG			none	none	none	3 2	2800	690	990	1 1	25	350	3,900	17	25	none	none	none	100,000	none	none
	EB-16	5																	10.1	ND	7.1
		10																	ND	ND	5.6
		15																	ND		
		20																	3		
	EB-17	5																	ND	ND	ND
		10																	ND	ND	ND
		15																	12.3		
		20																	2.6		
	EB-18	5																	6.1	ND	4.6
		10																	5.5	ND	5.7
		15																	7.6		
		20																	3.7		
Former Fuel Oil and Alkane Oil Tanks west of "Storm-water Retention Area", (Tanks 0223 and 0224)	HA-7	6	ND	3000	ND																
	HA-8	6	ND	17	ND																
	EB-12	5	ND	150	720																
		10	0.68	1500	ND																
		15	ND	ND	ND																
		20	1.1	ND	ND																
		25	ND	68	ND																
		30	ND	77	31																
		35	ND	ND	ND																
	EB-13	5	170	550	160																
		10	ND	1400	ND																
		15	ND	15	ND																
		20	ND	660	ND																
		25	1.8	110	ND																
		30	1.8	36	ND																
		35	ND	ND	ND																
		40	ND	ND	ND																
CLARIFIERS																					
Clarifier between Bldgs 2 and 14	Q-E	8				ND	ND	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND		
	Q-W	8				ND	ND	ND	ND	0.059	0.026	ND	ND	ND	ND	ND	ND	ND	ND		
	EB-8	5				ND	ND	ND	ND	0.01	ND	0.0043	ND	ND	ND	ND	ND	ND	ND		
		10				ND	ND	ND	ND	0.076	ND	0.0043	ND	ND	ND	ND	ND	ND	ND		
		15				ND	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND		
		20				ND	ND	ND	ND	0.074	ND	0.0036	ND	0.022	ND	ND	ND	ND	ND		
		25				ND	ND	ND	ND	ND	ND	ND	ND	0.0076	ND	ND	ND	ND	ND		
		30				ND	ND	ND	ND	ND	ND	ND	0.0068	0.051	ND	ND	ND	ND	ND		
		35				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
		40				ND	ND	ND	ND	ND	ND	ND	ND	0.0031	ND	ND	ND	ND	ND		
		45				0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		

TABLE 8
Analytical Results for Assessment Samples
Post-Closure Assessment Program

LOCATION	Post Closure Exploratory Soil Borings	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)											
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	Dichloro difluromethane	1,1-DCA	TCE	PCE	Naptha lene	1,2,4 TMB	1,3,5 TMB	Form.	Ammonia	MBAS
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 350 2m	Method 425 1m
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0 5	10	10	0 005	0 005	0 005	0 01	0 01	0 01	0 002	0 005	0 003	0 003	0 02	0 005	0 005	2	10	1
PRG			none	none	none	3 2	2800	690	990	1 1	25	350	3 900	17	25	none	none	none	100,000	none	none
	EB-9	5				ND	ND	ND	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND			
		10				ND	ND	ND	ND	0.64	ND	ND	ND	ND	ND	ND	ND	ND			
		15				ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND			
		20				ND	ND	ND	ND	0.46	ND	ND	ND	ND	ND	ND	ND	ND			
		25				ND	ND	ND	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND			
		30				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		35				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45				0.012	0.0051	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
	EB-10	5				ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND			
		10				ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	ND	ND	ND			
		15				ND	ND	ND	ND	0.089	ND	ND	ND	ND	ND	ND	ND	ND			
		20				ND	ND	ND	ND	0.022	ND	ND	ND	ND	ND	ND	ND	ND			
		25				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		30				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		35				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45				0.031	ND	ND	ND	ND	ND	ND	ND	0.0032	ND	ND	ND	ND			
	EB-11	5				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		10				ND	ND	ND	ND	0.062	ND	ND	ND	ND	ND	ND	ND	ND			
		15				ND	ND	ND	ND	0.066	ND	ND	ND	ND	ND	ND	ND	ND			
		20				ND	ND	ND	ND	0.091	ND	ND	ND	ND	ND	ND	ND	ND			
		25				ND	ND	ND	ND	0.028	ND	ND	ND	ND	ND	ND	ND	ND			
		30				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		35				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
Main Clarifier at the South Gate Preceeding the Sewer Discharge	R1	16	ND	49	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	0.19			230
	R2	16	0.61	13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			47
	EB-1	5	ND	200	1500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND			
		10	ND	13	21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		15	3.3	69	99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.21	0.22	0.055			
		25	ND	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	0.22	0.047			
		30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
		45	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
AREAS of CONCERN or NEEDING ADDITIONAL ASSESSMENT																					
Lube Oil Storage Area inside Bldg 6	HA-2	3	0.5	3200	5500																

TABLE 8
Analytical Results for Assessment Samples
Post-Closure Assessment Program

LOCATION	Post Closure Exploratory Soil Borings	Sample Depth (feet below ground surface)	Petroleum Hydrocarbons			Aromatic Compounds				Volatile Organic Compounds (1)												
			TPH C4-C12	TPH C13-C22	TPH C23+	Benzene	Toluene	Ethyl benzene	Xylenes	Chloro form	Methylene Chloride	Dichloro difluromethane	1,1-DCA	TCE	PCE	Naptha lene	1,2,4 TMB	1,3,5 TMB	Form.	Ammonia	MBAS
			Method 8015FC	Method 8015FC	Method 8015FC	Method 8020	Method 8020	Method 8020	Method 8020	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8260	Method 8315	Method 350.2m	Method 425.1m
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Practical Quantitation Limits			0.5	10	10	0.005	0.005	0.005	0.01	0.01	0.01	0.002	0.005	0.003	0.003	0.02	0.005	0.005	2	10	1
PRG			none	none	none	3.2	2800	690	930	1.1	25	350	3,900	17	25	none	none	none	100,000	none	none
	EB-4	5	ND	ND	ND																
		10	ND	ND	ND																
		15	ND	ND	ND																
		20	ND	ND	ND																
	EB-5	5	ND	ND	ND																
		10	ND	ND	ND																
	EB-6	5	ND	ND	ND																
		10	ND	ND	ND																
	EB-7	5	ND	150	430																
		10	ND	ND	ND																
POST-CLOSURE INVESTIGATIVE DERIVED WASTE																					
Soil Stockpiled derived from the installation of monitoring wells (MW-11, MW-12 and MW-13)	MW-11(2)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
	MW-12 (2)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			
	MW-13 (2)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND			

NOTES

Refer to Plate 3 for sample locations
Certified Analytical Laboratory Reports and Chain-of-Custody Documentation are provided in Appendix C
ALL Methods shown are U.S. EPA Methods unless otherwise listed

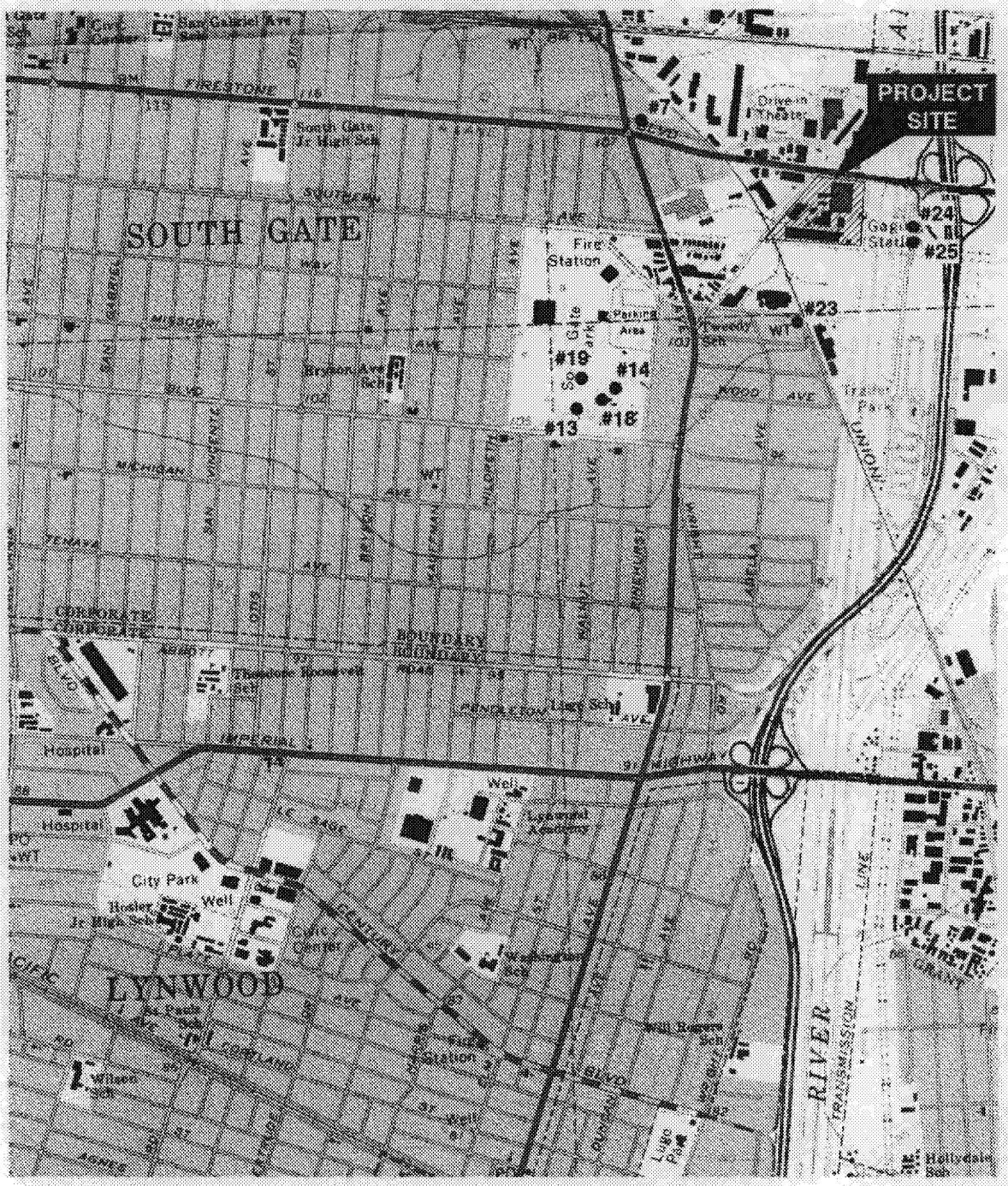
ND(<50) = Not Detected at an elevated method detection limit shown in parenthesis. Elevated limits due to matrix interfearences
None = No Sample Collected for this Waste Management Unit. Refer to prior Phase II thorugh Phase IV investigations
PRG = Preliminary Remediation Goal, U.S EPA Region IX, September 1995, for industrial soils

TPH-FC = Total Petroleum Hydrocarbons, Fuel Charaterization
1,2,4 TMB = 1,2,4 Trimethylbenzene
1,3,5 TMB = 1,3,5 Trimethylbenzene
Form = Formaldehyde
MBAS = Methylene Blue Active Substances

(1) Volatile Organic Compounds reported in the soil samples collected and analyzed by EPA method 8260. Remaining VOCs from EPA 8260 Analysis were not reported above method detection limits
(2) Four composite soil samples were collected approximately 2 feet into the stockpile.

FIGURES

April 1997
Project No. 2277.006



SOURCE: USGS 7.5' Quadrangle, South Gate, California (Photorevised 1981)

●#23 Municipal Supply Wells

NORTH
0 1000 2000
FEET

SITE LOCATION MAP
THE DIAL CORPORATION
Main Facility
9300 Rayo Avenue
South Gate, California

FIGURE 1

9648\0411loc1.dwf

April 1997
Project No. 2277-006

MW-6*	ug/L
Compound	
TPH **	ND
BENZENE	**2.8**
Chloroform	ND
1,2 DCA	ND
1,1 DCA	0.91
TCE	ND
Formaldehyde **	0.224
**MBAS ** **	**5.5**
**CHLORIDE ** **	**3500**

MW-1	ug/L
Compound	
TPH **	ND
Benzene	ND
Chloroform	ND
1,2 DCA	ND
1,1 DCA	ND
TCE	ND
Formaldehyde **	TRACE <0.02
**MBAS ** **	**0.14**
**CHLORIDE ** **	**98**

MW-7	ug/L
Compound	
TPH **	0.55
Benzene	0.68
Chloroform	1.7
1,2 DCA	ND
1,1 DCA	1.5
TCE	ND
Formaldehyde **	0.157
**MBAS ** **	**0.14**
**CHLORIDE ** **	**3400**

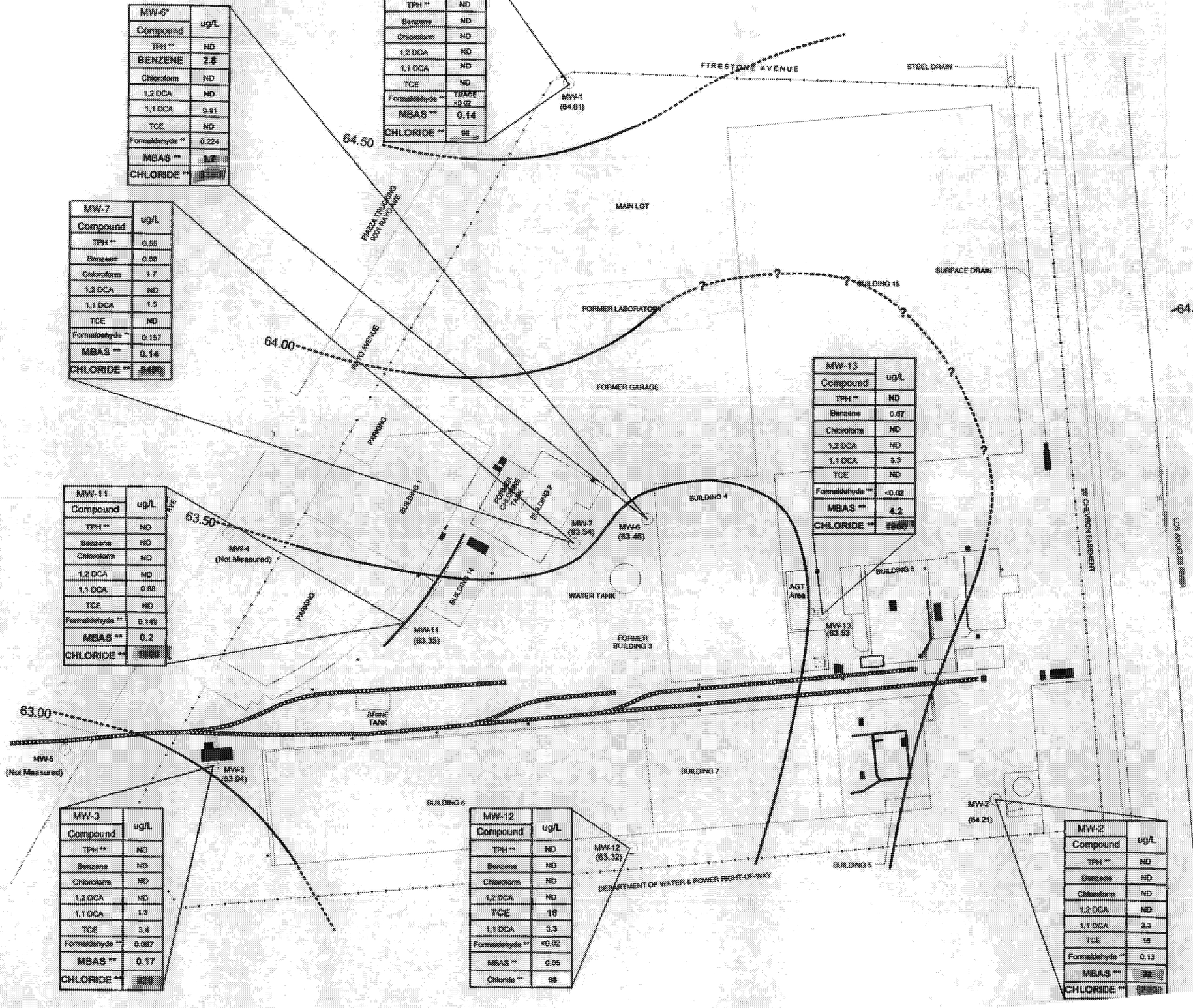
MW-13	ug/L
Compound	
TPH **	ND
Benzene	0.67
Chloroform	ND
1,2 DCA	ND
1,1 DCA	3.3
TCE	ND
Formaldehyde **	<0.02
**MBAS ** **	**4.2**
**CHLORIDE ** **	**1900**

MW-11	ug/L
Compound	
TPH **	ND
Benzene	ND
Chloroform	ND
1,2 DCA	ND
1,1 DCA	0.68
TCE	ND
Formaldehyde **	0.149
**MBAS ** **	**0.2**
**CHLORIDE ** **	**1600**

MW-3	ug/L
Compound	
TPH **	ND
Benzene	ND
Chloroform	ND
1,2 DCA	ND
1,1 DCA	1.3
TCE	3.4
Formaldehyde **	0.067
**MBAS ** **	**0.17**
**CHLORIDE ** **	**820**

MW-12	ug/L
Compound	
TPH **	ND
Benzene	ND
Chloroform	ND
1,2 DCA	ND
TCE	**16**
1,1 DCA	3.3
Formaldehyde **	<0.02
MBAS **	0.05
Chloride **	98

MW-2	ug/L
Compound	
TPH **	ND
Benzene	ND
Chloroform	ND
1,2 DCA	ND
1,1 DCA	3.3
TCE	16
Formaldehyde **	0.13
**MBAS ** **	**36**
**CHLORIDE ** **	**1700**



LEGEND

MW-2 (64.21) EB-13 — Ground Water Monitoring Well Location With Ground Water Elevation Measured February 24, and 25, 1997

64.00 — Ground Water Contour Elevation Measured in Feet (MSL): Dashed Where Approximate Queried Where Inferred.

NOTE:

MW-6* DATA REPRESENTS THE HIGHEST CONCENTRATION REPORETED FOR EITHER THE PRIMARY OR DUPLICATE SAMPLE

* DATA SHOWN IN BOLD AND ALL CAPITALIZED IS ABOVE THE PRIMARYMCL OR SECONDARY MCL FOR DRINKING WATER

** DATA IS REPORTED IN MG/L

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

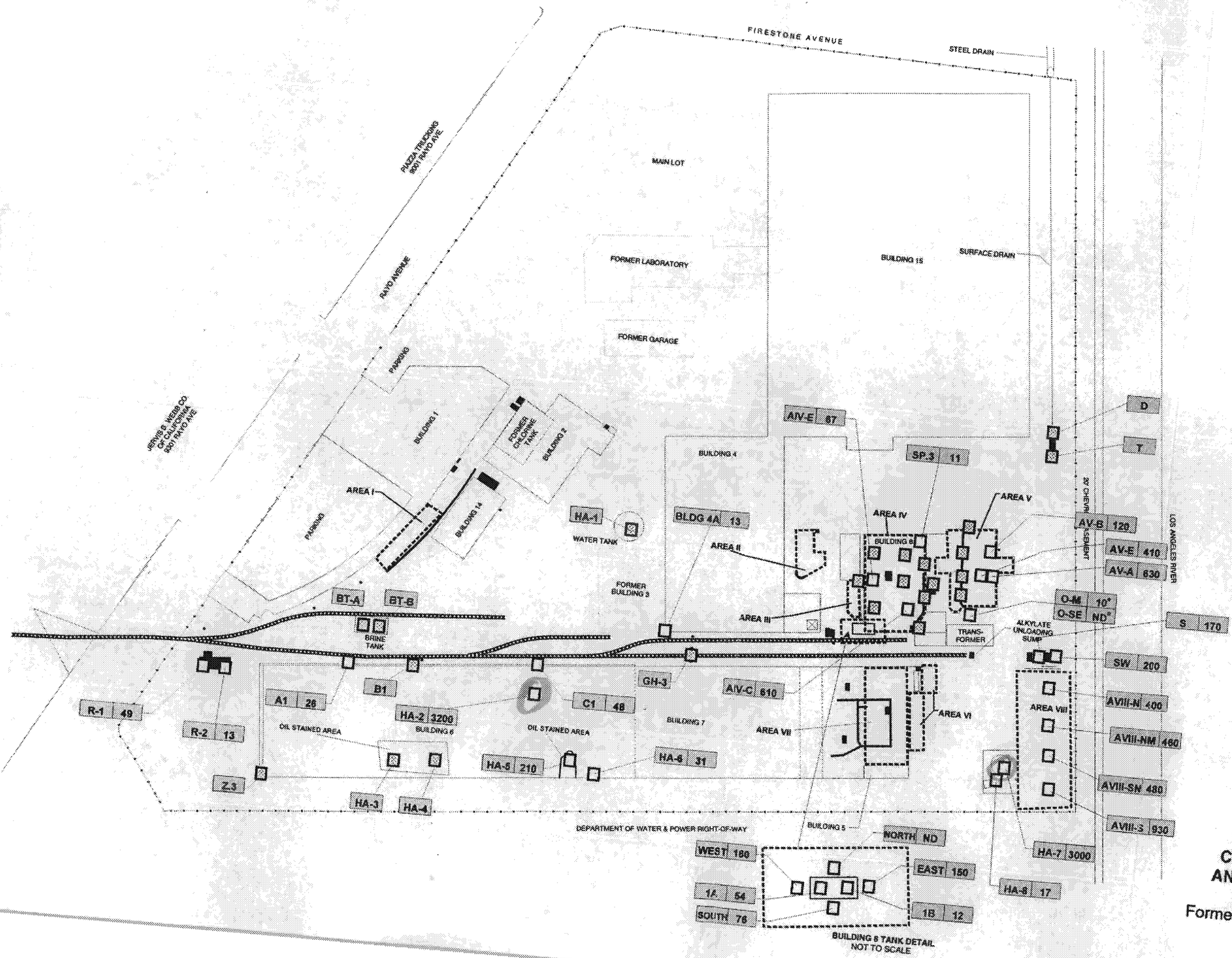
NORTH

0 100 200
FEET

GROUND WATER GRADIENT MAP AND RESULTS OF POST-CLOSURE SAMPLING FEBRUARY 24 AND 25, 1997

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

- AREA II — Perimeter of AGT Sample Area.
- Sample Location — AV-B 120 — Sample With Reportable Concentration of Petroleum Hydrocarbons (C_{13}-C_{22}) in mg/kg.
- Sample Location — T — Sample With No Reportable Concentration Above the Practical Quantitation Limit of 10 mg/kg.
- Sump, Clarifier or Drain Location.
- O-M 10* / O-SE ND* — Additionally analyzed for PCBs by U.S. EPA 8080: Sample O-M contained a reported concentration of 0.080 mg/kg Aroclor-1254.

Note: C_{13}-C_{22} range was depicted, because it was the most frequently reported in the samples analyzed. In addition the C_{13}-C_{22} range was the highest concentration range reported.

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

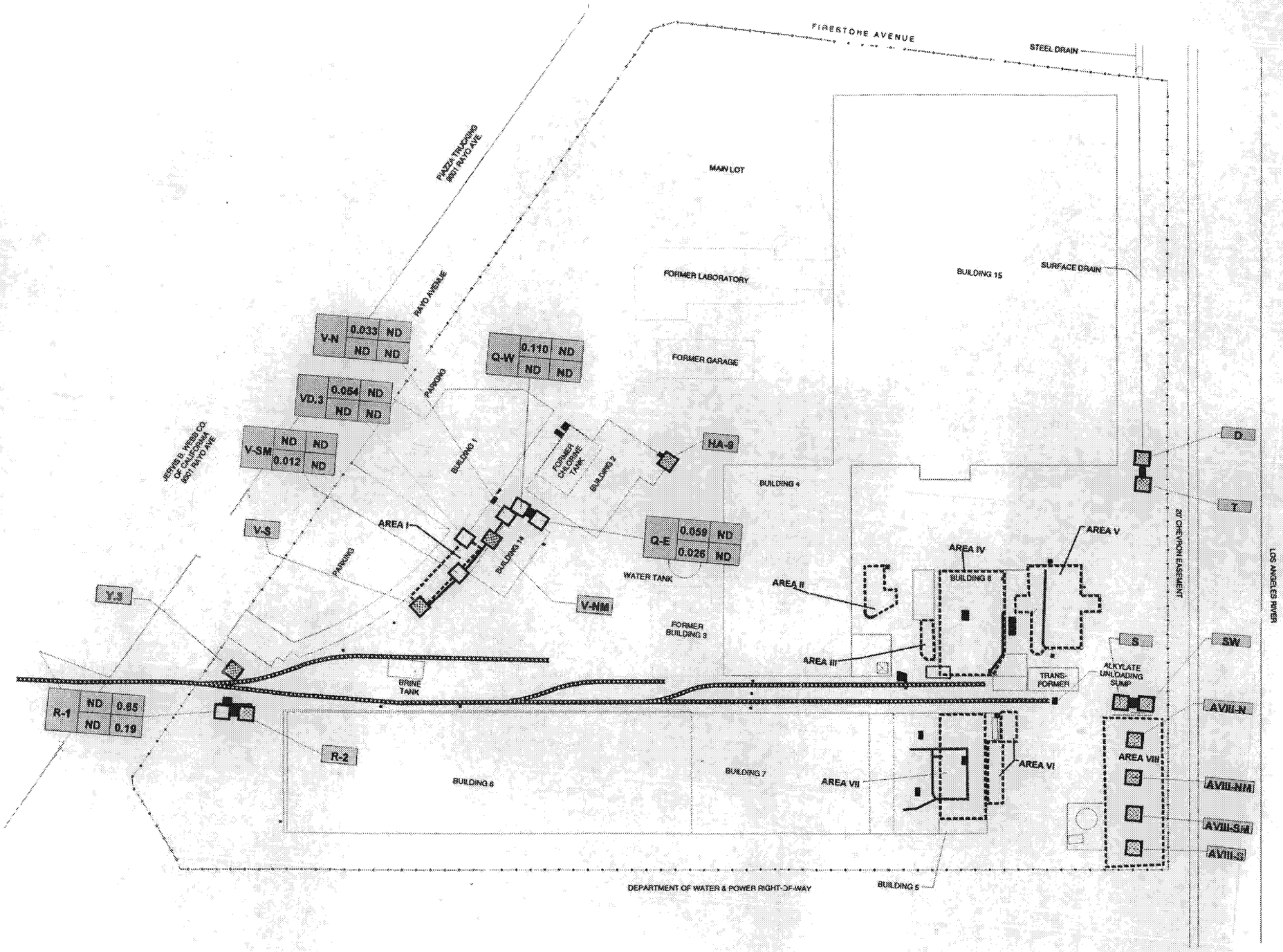
NORTH

0 100 200
FEET

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF TPH ANALYSIS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

AREA II — Perimeter of AGT Sample Area.

Sampling Location — Q-E (CHLOROFORM (mg/kg); 1,2,4 Trimethy-Benzene (mg/kg); Methylene Chloride (mg/kg); 1,3,5 Trimethy-Benzene (mg/kg)) — Sample With Reportable Concentrations of Volatile Organic Compounds, ND = Not Detected Above Practical Quantitative Limit of 0.005 to 0.010 mg/kg.

Sampling Location — T — Sample With No Reportable Concentration of Volatile Organic Compounds Above the Practical Quantitative Limit of 0.005 to 0.020 mg/kg.

Sump, Clarifier or Drain Location.

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

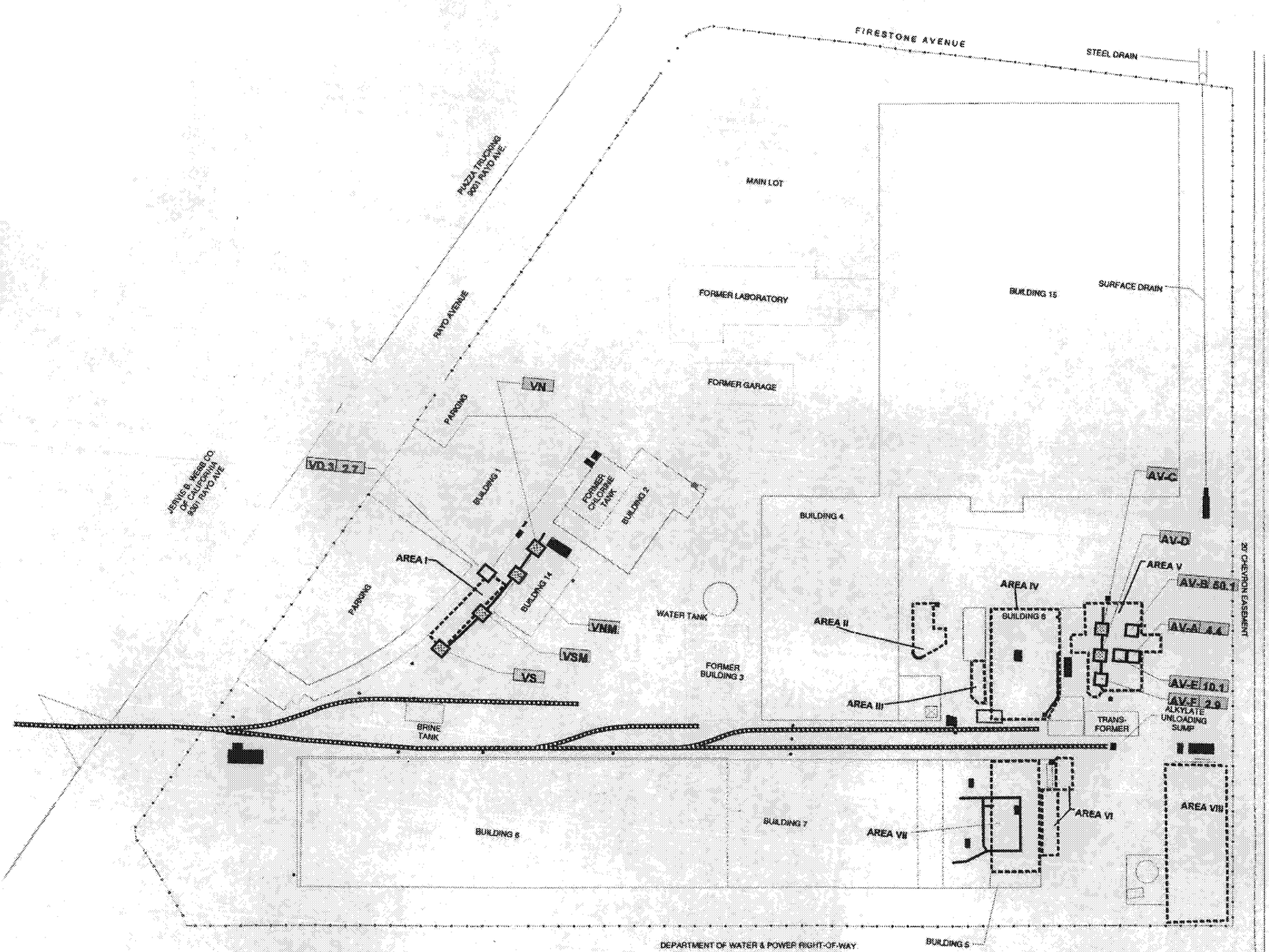
NORTH

0 100 200
FEET

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF ANALYSIS FOR VOLATILE ORGANIC COMPOUNDS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

AREA II — Perimeter of AGT Sample Area.

Sample Location — AV-B 60.1 — Sample With Reportable Concentration of Formaldehyde (CH_2O) in mg/kg (parts per million).

Sample Location — VN — Sample With No Reportable Concentration of Formaldehyde (CH_2O) Above the Practical Quantitative Limit of 2 mg/kg.

Sump, Clarifier or Drain Location.

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

NORTH

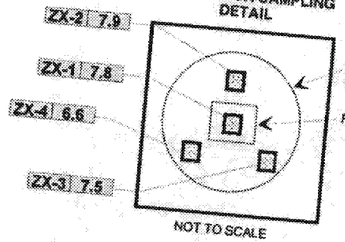
0 100 200
FEET

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF ANALYSIS FOR FORMALDEHYDE

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

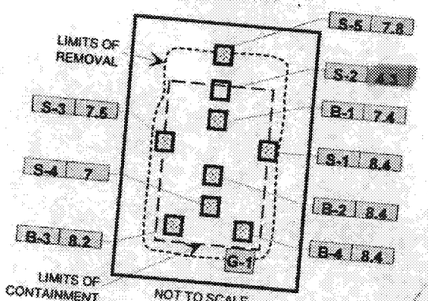
April 1997
Project No. 2277-006

SUMP ZX
EXCAVATION SAMPLING
DETAIL



NOT TO SCALE

ACID TANK CONTAINMENT
AREA DETAIL



NOT TO SCALE

LEGEND

AREA II — Perimeter of AGT Sample Area.

Sample Location — J-S 10.2 — Sample With a pH Ranging From <5 to >10.

Sample Location — S-6 7.8 — Sample With a pH of >5 and <10. (See Tables 6 And 7 For Closure Sampling Results)

Sump, Clarifier or Drain Location.

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

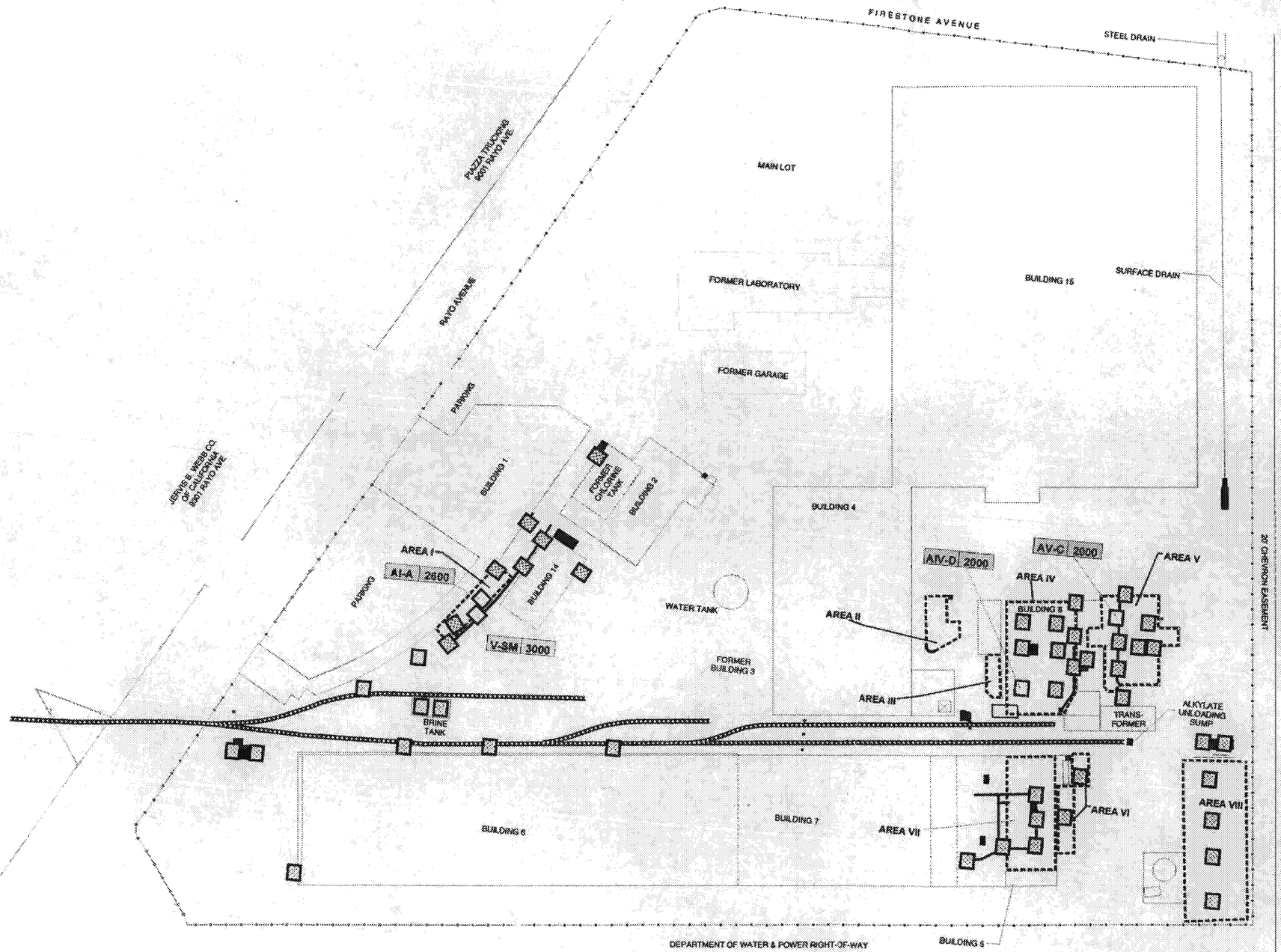
NORTH

0 100 200
FEET

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF ANALYSIS FOR pH

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

AREA II — Perimeter of AGT Sample Area.

Sample Location — AV-C | 2000 — Sample with chloride concentration equal to or greater than 2000 mg/kg.

Sample Location — Sample with Chloride Concentration of Less Than 2000 mg/kg. (See Table 6 And 7 For Closure Results)

Sump, Clarifier or Drain Location.

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

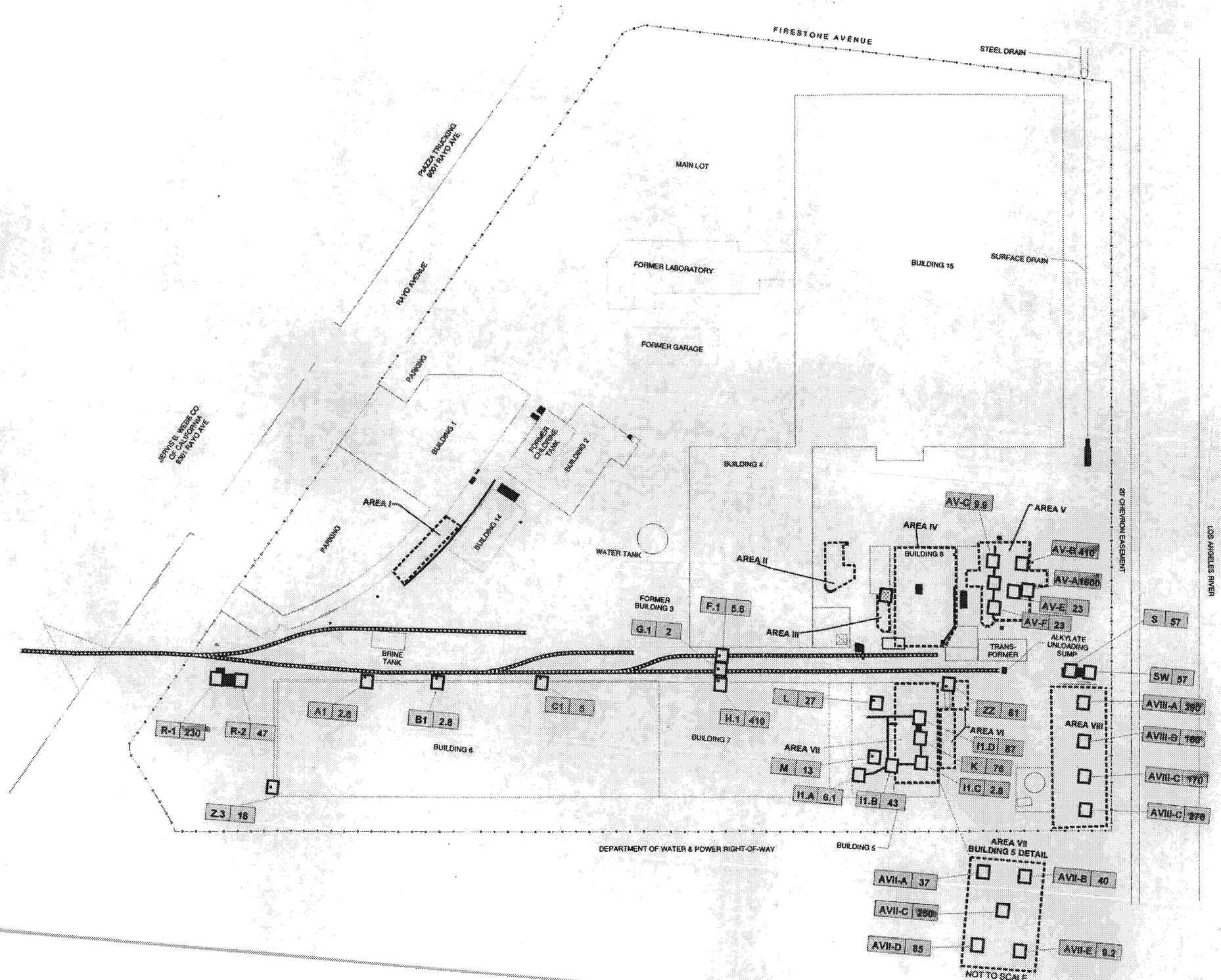
NORTH

0 100 200
FEET

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF CHLORIDE ANALYSIS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

AREA II — Perimeter of AGT Sample Area.

Sample Location — AV-C 9.6 — Sample With Reportable Concentration.

Sample Location — Sample With No Reportable Concentration Above the Practical Quantitation Limit of 1 mg/kg.

Sump, Clarifier or Drain Location.

NORTH

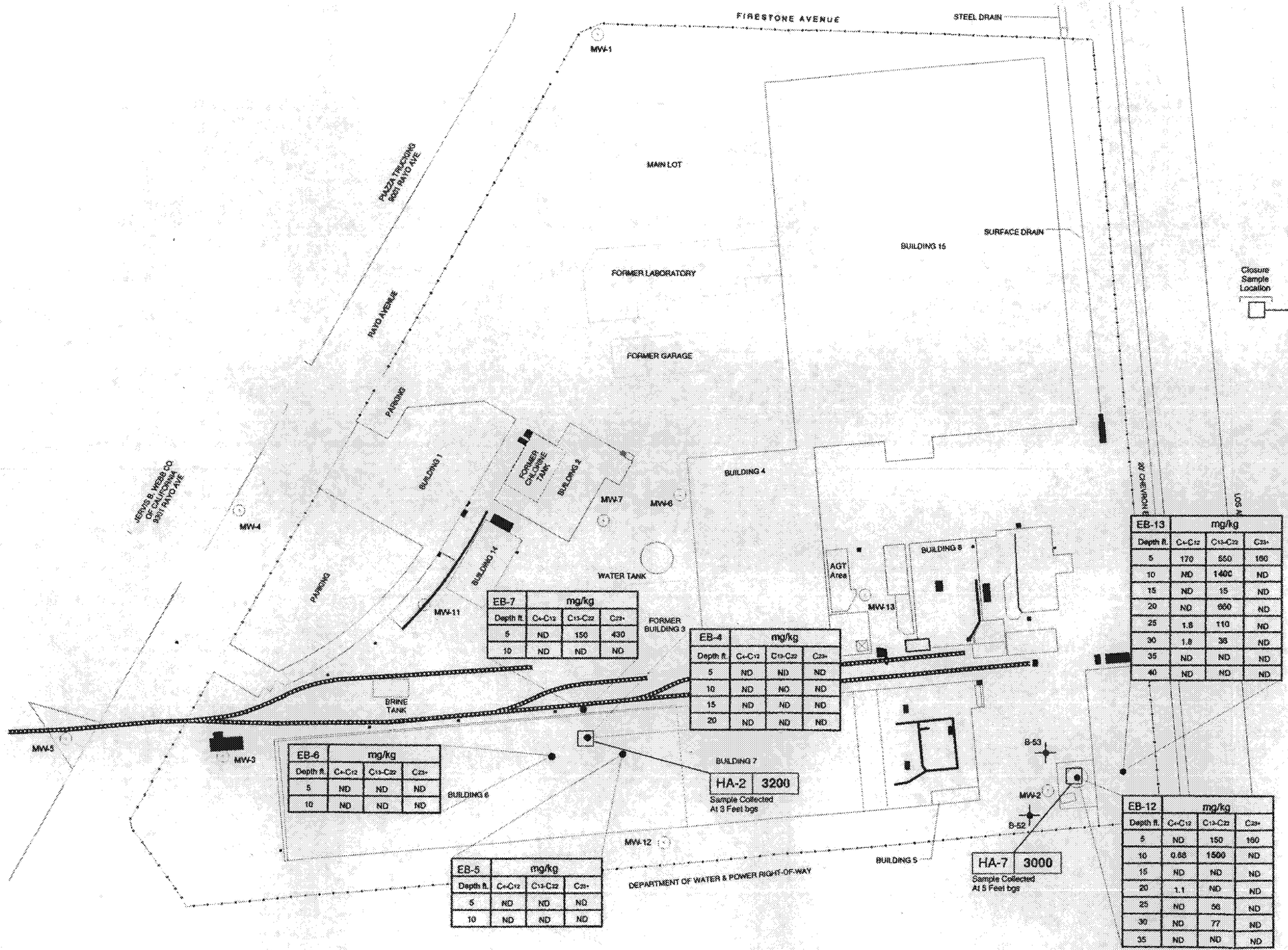
0 100 200
FEET

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS AND RESULTS OF MBAS ANALYSIS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

April 1997
Project No. 2277-006



LEGEND

- MW-2 — Ground Water Monitoring Well Location
- EB-13 — Post-Closure Soil Boring Location
- B-53 — Pre-closure Exploratory Soil Boring Location
- Closure Sample Location: HA-7 | 3000 — Sample Within Reportable Concentration AboveThe Screening Level Criteria (C_{13} - C_{22}).
- Suymp, Clarifier, or Drain Location

* SAMPLES IN BOLD ARE ABOVE THE SCREENING LEVEL CRITERIA (TABLE 5); SAMPLES BELOW 40 FEET WERE NOT CONSIDERED REFLECTIVE OF VADOSE-ZONE SOILS. BELOW 40 FEET SOILS ARE LIKELY INFLUENCED BY THE CAPILLARY FRINGE AND GROUNDWATER

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

NORTH

0 100 200
FEET

POST CLOSURE ANALYTICAL RESULTS PETROLEUM HYDROCARBONS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

C:\Plates\Plate0341 temD.ds4 (1-3,7)

April 1997
Project No. 2277-006

CB-1	mg/kg		
Depth ft.	TPH Gasoline	Benzene	VOCs
5	ND	ND	ND
10	ND	ND	ND
15	ND	ND	ND
20	ND	ND	ND
25	ND	ND	ND
30	ND	ND	ND
35	ND	ND	1 0.0037 2 0.0042
40	ND	**0.0078**	ND
GW 45	ND	0.080	ND

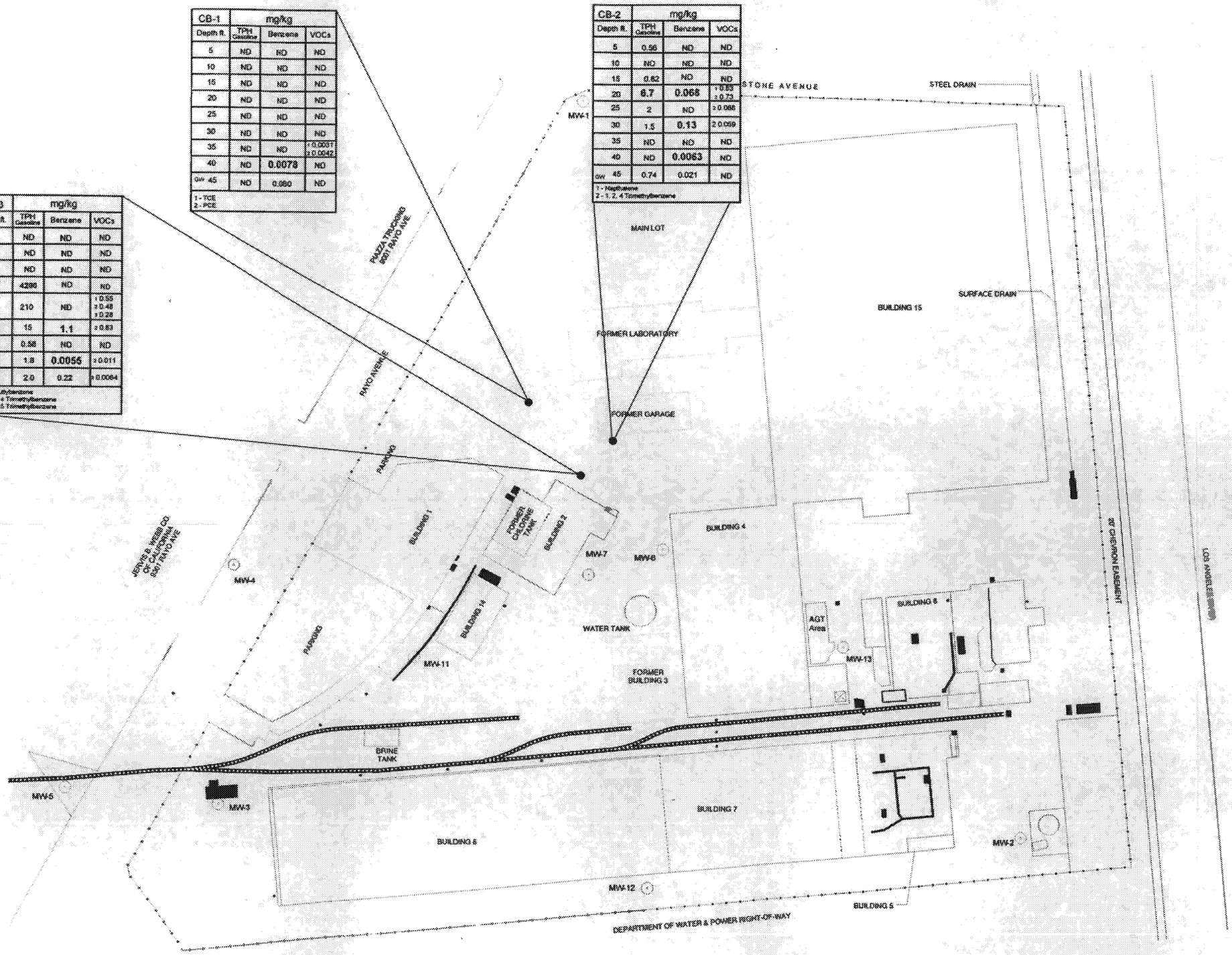
1 - TCE
2 - PCE

CB-2	mg/kg		
Depth ft.	TPH Gasoline	Benzene	VOCs
5	0.56	ND	ND
10	ND	ND	ND
15	0.62	ND	ND
20	**8.7**	**0.068**	1 0.83 2 0.73
25	2	ND	2 0.066
30	1.5	**0.13**	2 0.059
35	ND	NO	ND
40	ND	**0.0063**	ND
GW 45	0.74	0.021	ND

1 - Naphthalene
2 - 1, 2, 4 Trimethylbenzene

CB-3	mg/kg		
Depth ft.	TPH Gasoline	Benzene	VOCs
5	ND	ND	ND
10	ND	ND	ND
15	ND	ND	ND
20	4299	ND	ND
25	210	ND	1 0.55 2 0.48 3 0.28
30	15	1.1	2 0.83
35	0.52	ND	ND
40	1.8	**0.0055**	2 0.011
GW 45	2.0	0.22	2 0.0084

1 - N Butylbenzene
2 - 1, 2, 4 Trimethylbenzene
3 - 1, 3, 5 Trimethylbenzene



LEGEND

CB-2 ● Post-closure Soil Boring Location

MW-2 ○ Ground Water Monitoring Well Location

▬ Sump, Clarifier or Drain Location

* SAMPLES IN BOLD ARE ABOVE THE SCREENING LEVEL CRITERIA (TABLE 5); SAMPLES BELOW 40 FEET WERE NOT CONSIDERED REFLECTIVE OF VADOSE-ZONE SOILS. BELOW 40 FEET SOILS ARE LIKELY INFLUENCED BY THE CAPILLARY FRINGE AND GROUNDWATER

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

NORTH

0 100 200
FEET

CONFIRMATORY SOIL BORINGS: SVE CLOSURE, OLD GARAGE AND LABORATORY
THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

C:\Plotter\Fresh\3411\sm2.dwg (1-3-4)

April 1997
Project No. 2277-006

EB-10	mg/kg		
Depth ft.	Chloroform	TCE	Benzene
5	0.1	ND	ND
10	0.15	ND	ND
15	0.099	ND	ND
20	0.022	ND	ND
25	ND	ND	ND
30	ND	ND	ND
35	ND	ND	ND
40	ND	ND	ND
gw 45	ND	0.0032	0.031

EB-11	mg/kg		
Depth ft.	Chloroform	TCE	Benzene
5	ND	ND	ND
10	0.062	ND	ND
15	0.066	ND	ND
20	0.091	ND	ND
25	0.026	ND	ND
30	ND	ND	ND
35	ND	ND	ND
40	ND	ND	ND
gw 45	ND	ND	ND

EB-8	mg/kg		
Depth ft.	Chloroform	TCE	Benzene
5	0.1	ND	ND
10	0.076	ND	ND
15	0.5	ND	ND
20	0.024	0.022	ND
25	ND	0.0076	ND
30	ND	0.051	ND
35	ND	ND	ND
40	ND	0.0031	ND
gw 45	ND	ND	0.01

EB-9	mg/kg		
Depth ft.	Chloroform	TCE	Benzene
5	0.17	ND	ND
10	0.64	ND	ND
15	0.28	ND	ND
20	0.46	ND	ND
25	0.20	ND	ND
30	ND	ND	ND
35	ND	ND	ND
40	ND	ND	ND
gw 45	ND	ND	0.012

EB-11	mg/kg	
Depth ft	TOTAL TPH	VOCs
5	1700	> 0.011
10	21	ND
15	171	ND
20	ND	1 0.31 2 0.047 3 0.22
25	20	1 0.14 3 0.22
30	ND	ND
35	ND	ND
40	ND	ND
gw 45	ND	ND

1- Naphthalene
2 - 1, 3, 5 Trimethylbenzene
3 - 1, 2, 4 Trimethylbenzene

FIRESTONE AVENUE
STEEL DRAIN
MW-1
RAYO AVENUE
PARKING
BUILDING 1
FORMER CELLARE TANK
BUILDING 2
BUILDING 4
MW-7
MW-6
MW-4
BUILDING 14
WATER TANK
MW-11
FORMER BUILDING 3
FORMER GARAGE
BUILDING 15
SURFACE DRAIN
AGT Area
BUILDING 8
MW-13
JAMES B. WEBB CO. OF CALIFORNIA 9601 RAYO AVE
BRINE TANK
MW-5
MW-3
BUILDING 6
BUILDING 7
MW-2
MW-12
BUILDING 5
DEPARTMENT OF WATER & POWER RIGHT-OF-WAY
SANTA FE SPRINGS ROAD
LOS ANGELES RIVER

LEGEND

MW-2 ○ Ground Water Monitoring Well Location

EB-9 ● Post-Closure Soil Boring Location

▬ Sump, Clarifier or Drain Location

* SAMPLES IN BOLD ARE ABOVE THE SCREENING LEVEL CRITERIA (TABLE 5); SAMPLES BELOW 40 FEET WERE NOT CONSIDERED REFLECTIVE OF VADOSE-ZONE SOILS. BELOW 40 FEET SOILS ARE LIKELY INFLUENCED BY THE CAPILLARY FRINGE AND GROUNDWATER

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

NORTH

0 100 200
FEET

POST CLOSURE ASSESSMENT DATA VOLATILE ORGANIC COMPOUNDS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

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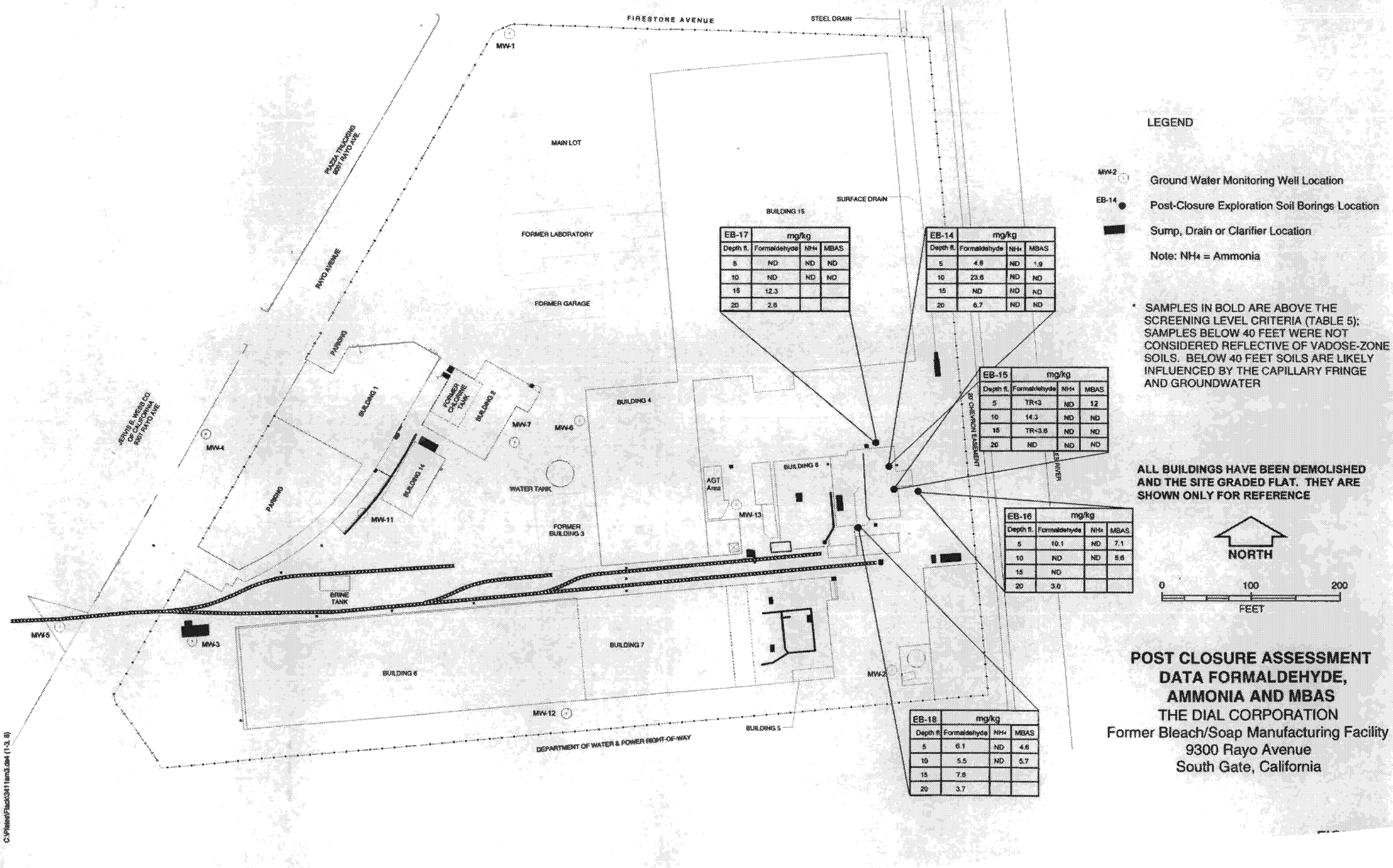
April 1997
Project No. 2277-006



EB-17	mg/kg		
Depth ft.	Formaldehyde	NH4	MBAS
5	ND	ND	ND
10	ND	ND	ND
15	12.3		
20	2.6		

EB-14	mg/kg		
Depth ft.	Formaldehyde	NH4	MBAS
5	4.8	ND	1.9
10	23.6	ND	ND
15	ND	ND	ND
20	6.7	ND	ND

EB-15	mg/kg		
Depth ft.	Formaldehyde	NH4	MBAS
5	TR<3	ND	12
10	14.3	ND	ND
15	TR<3.6	ND	ND
20	ND	ND	ND

EB-16	mg/kg		
Depth ft.	Formaldehyde	NH4	MBAS
5	10.1	ND	7.1
10	ND	ND	8.6
15	ND		
20	3.0		

EB-18	mg/kg		
Depth ft.	Formaldehyde	NH4	MBAS
5	6.1	ND	4.6
10	5.5	ND	5.7
15	7.8		
20	3.7		

LEGEND

MW-2 ○ Ground Water Monitoring Well Location

EB-14 ● Post-Closure Exploration Soil Borings Location

▬ Sump, Drain or Clarifier Location

Note: NH_4 = Ammonia

* SAMPLES IN BOLD ARE ABOVE THE SCREENING LEVEL CRITERIA (TABLE 5); SAMPLES BELOW 40 FEET WERE NOT CONSIDERED REFLECTIVE OF VADOSE-ZONE SOILS. BELOW 40 FEET SOILS ARE LIKELY INFLUENCED BY THE CAPILLARY FRINGE AND GROUNDWATER

ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE

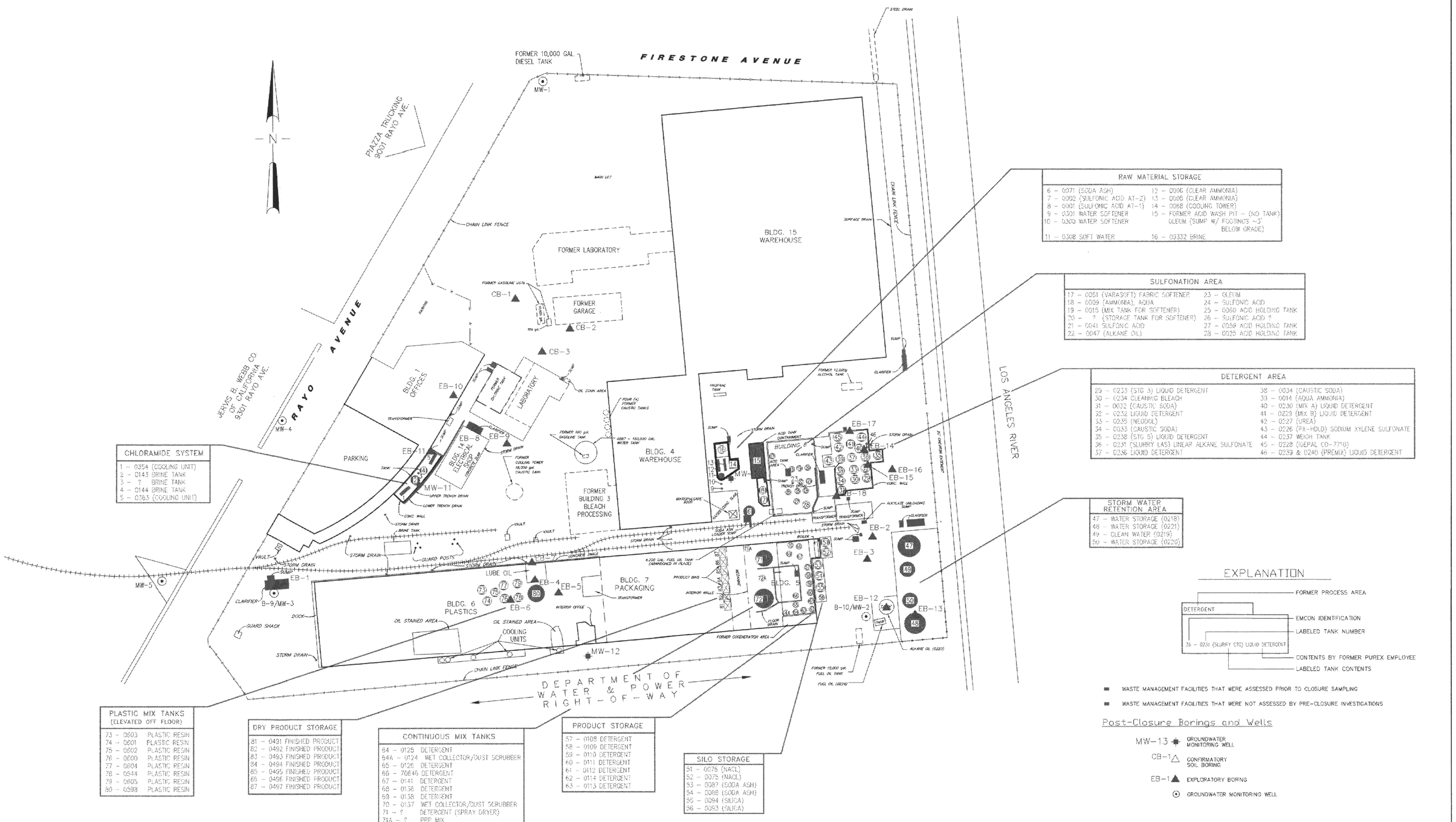
NORTH

0 100 200
FEET

POST CLOSURE ASSESSMENT DATA FORMALDEHYDE, AMMONIA AND MBAS

THE DIAL CORPORATION
Former Bleach/Soap Manufacturing Facility
9300 Rayo Avenue
South Gate, California

C:\Pltdata\Plots\0311\sm3.dwg (1-3, 8)



RAW MATERIAL STORAGE	
6 – 0071 (SODA ASH)	12 – 0006 (CLEAR AMMONIA)
7 – 0002 (SULFONIC ACID AT-2)	13 – 0005 (CLEAR AMMONIA)
8 – 0001 (SULFONIC ACID AT-1)	14 – 0088 (COOLING TOWER)
9 – 0301 WATER SOFTENER	15 – FORMER ACID WASH PIT – (NO TANK)
10 – 0306 WATER SOFTENER	OLEUM (SUMP W/ FOOTINGS ~3' BELOW GRADE)
11 – 0308 SOFT WATER	16 – 09332 BRINE

SULFONATION AREA	
17 – 0051 (VARASOFT) FABRIC SOFTENER	23 – OLEUM
18 – 0009 (AMMONIA), AQUA	24 – SULFONIC ACID
19 – 0015 (MIX TANK FOR SOFTENER)	25 – 0060 ACID HOLDING TANK
20 – ? (STORAGE TANK FOR SOFTENER)	26 – SULFONIC ACID ?
21 – 0041 SULFONIC ACID	27 – 0058 ACID HOLDING TANK
22 – 0047 (ALKANE OIL)	28 – 0025 ACID HOLDING TANK

DETERGENT AREA	
29 – 0233 (STG 3) LIQUID DETERGENT	38 – 0034 (CAUSTIC SODA)
30 – 0234 CLEANING BLEACH	39 – 0014 (AQUA AMMONIA)
31 – 0032 (CAUSTIC SODA)	40 – 0236 (MIX A) LIQUID DETERGENT
32 – 0232 LIQUID DETERGENT	41 – 0229 (MIX B) LIQUID DETERGENT
33 – 0235 (NEODOL)	42 – 0227 (UREA)
34 – 0033 (CAUSTIC SODA)	43 – 0226 (PX-HOLD) SODIUM XYLENE SULFONATE
35 – 0238 (STG 5) LIQUID DETERGENT	44 – 0237 WEIGH TANK
36 – 0231 (SLURRY LAS) LINEAR ALKANE SULFONATE	45 – 0228 (ISEPAL CO-720)
37 – 0236 LIQUID DETERGENT	46 – 0239 & 0240 (PREMIX) LIQUID DETERGENT

STORM WATER RETENTION AREA
47 – WATER STORAGE (0218)
48 – WATER STORAGE (0221)
49 – CLEAN WATER (0219)
50 – WATER STORAGE (0220)

CHLORAMIDE SYSTEM
1 – 0354 (COOLING UNIT)
2 – 0143 BRINE TANK
3 – ? BRINE TANK
4 – 0144 BRINE TANK
5 – 0353 (COOLING UNIT)

PLASTIC MIX TANKS (ELEVATED OFF FLOOR)	
73 – 0803	PLASTIC RESIN
74 – 0801	PLASTIC RESIN
75 – 0802	PLASTIC RESIN
76 – 0800	PLASTIC RESIN
77 – 0804	PLASTIC RESIN
78 – 0544	PLASTIC RESIN
79 – 0805	PLASTIC RESIN
80 – 0598	PLASTIC RESIN

DRY PRODUCT STORAGE
81 – 0491 FINISHED PRODUCT
82 – 0492 FINISHED PRODUCT
83 – 0493 FINISHED PRODUCT
84 – 0494 FINISHED PRODUCT
85 – 0495 FINISHED PRODUCT
86 – 0496 FINISHED PRODUCT
87 – 0497 FINISHED PRODUCT

CONTINUOUS MIX TANKS	
64 – 0125	DETERGENT
64A – 0124	WET COLLECTOR/DUST SCRUBBER
65 – 0126	DETERGENT
66 – 70845	DETERGENT
67 – 0141	DETERGENT
68 – 0136	DETERGENT
69 – 0138	DETERGENT
70 – 0137	WET COLLECTOR/DUST SCRUBBER
71 – ?	DETERGENT (SPRAY DRYER)
71A – ?	PRF MIX
72 – 10878	DETERGENT (SPRAY DRYER)
72A – ?	PROCESS TANK

PRODUCT STORAGE
57 – 0108 DETERGENT
58 – 0109 DETERGENT
59 – 0110 DETERGENT
60 – 0111 DETERGENT
61 – 0112 DETERGENT
62 – 0114 DETERGENT
63 – 0113 DETERGENT

SILO STORAGE
51 – 0075 (NACL)
52 – 0075 (NACL)
53 – 0087 (SODA ASH)
54 – 0088 (SODA ASH)
55 – 0094 (SILICA)
56 – 0093 (SILICA)

BENCHMARK:

CITY OF SOUTHGATE BENCHMARK

THE TOP OF A WATER VALVE HANDHOLE IN THE ASPHALT PARKING LOT AT THE SOUTHWEST CORNER OF RAYO AVENUE AND SOUTHERN AVENUE.

ELEVATION = 104.936

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50 ft.

NOTE:
ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE.

REVISIONS		
DATE	DESCRIPTION	BY

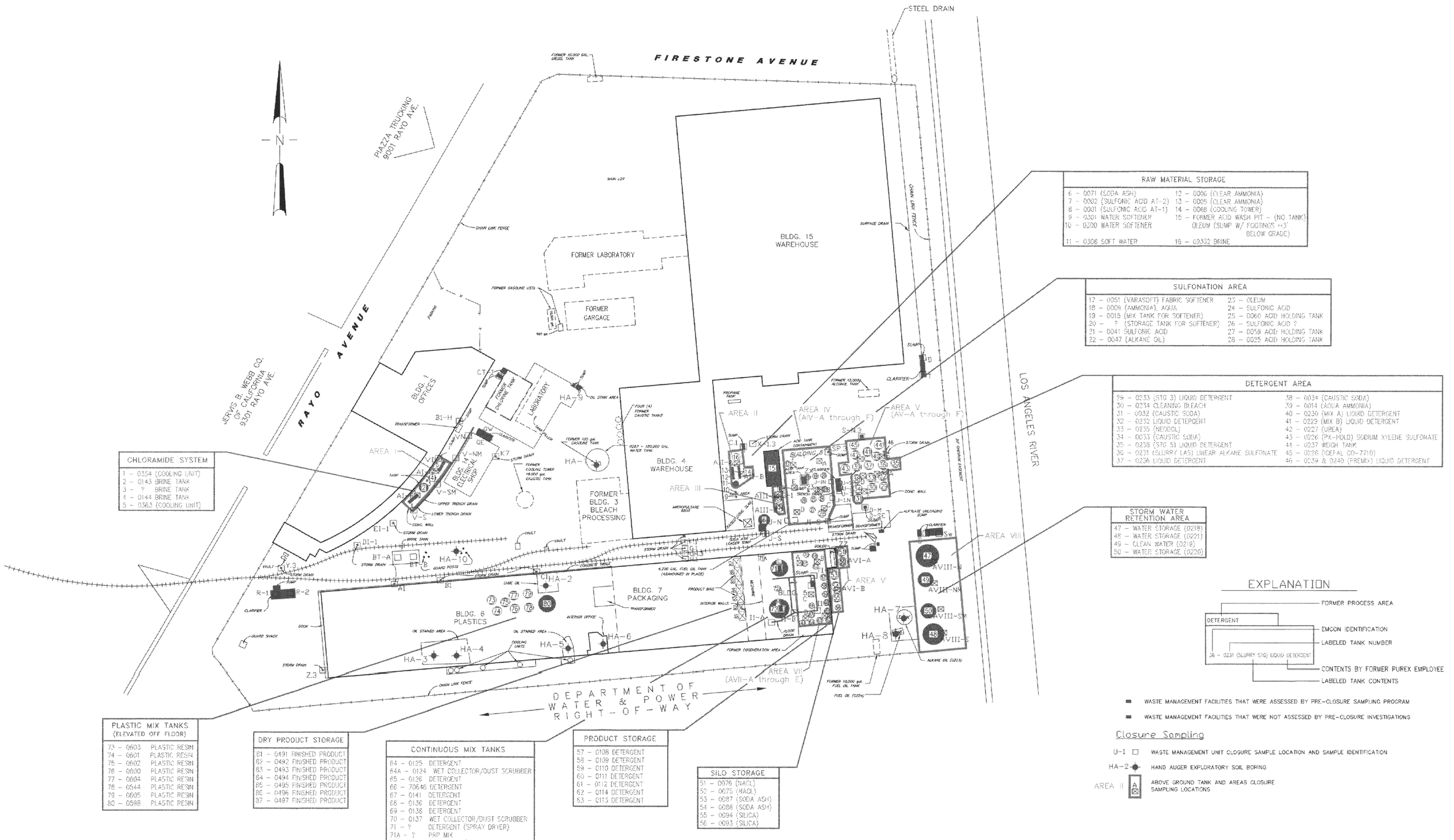
ENSR

PLATE 3

SITE PLAN SHOWING POST-CLOSURE SAMPLING LOCATIONS

The Dial Corporation
9300 Rayo Avenue
City, State

DRAWN: M. SCOP	DATE: 8/14/07	PROJECT NO.	REV.
FILE NO. 2277008D	CHK BY	2277-008-007	



RAW MATERIAL STORAGE	
6 – 0071 (SODA ASH)	12 – 0006 (CLEAR AMMONIA)
7 – 0002 (SULFONIC ACID AT-2)	13 – 0005 (CLEAR AMMONIA)
8 – 0001 (SULFONIC ACID AT-1)	14 – 0068 (COOLING TOWER)
9 – 0301 WATER SOFTENER	15 – FORMER ACID WASH PIT – (NO TANK)
10 – 0200 WATER SOFTENER	OLEUM (SUMP W/ FOOTINGS >3' BELOW GRADE)
11 – 0306 SOFT WATER	16 – 03332 BRINE

SULFONATION AREA	
17 – 0051 (VARASOFT) FABRIC SOFTENER	23 – OLEUM
18 – 0009 (AMMONIA), AQUA	24 – SULFONIC ACID
19 – 0015 (MIX TANK FOR SOFTENER)	25 – 0060 ACID HOLDING TANK
20 – ? (STORAGE TANK FOR SOFTENER)	26 – SULFONIC ACID ?
21 – 0041 SULFONIC ACID	27 – 0059 ACID HOLDING TANK
22 – 0047 (ALKANE OIL)	28 – 0025 ACID HOLDING TANK

DETERGENT AREA	
29 – 0233 (STG 3) LIQUID DETERGENT	38 – 0034 (CAUSTIC SODA)
30 – 0234 CLEANING BLEACH	39 – 0014 (AQUA AMMONIA)
31 – 0032 (CAUSTIC SODA)	40 – 0239 (MIX A) LIQUID DETERGENT
32 – 0232 LIQUID DETERGENT	41 – 0229 (MIX B) LIQUID DETERGENT
33 – 0235 (NEODOL)	42 – 0227 (UREA)
34 – 0033 (CAUSTIC SODA)	43 – 0226 (PX-HOLD) SODIUM XYLENE SULFONATE
35 – 0238 (STG 5) LIQUID DETERGENT	44 – 0037 WEIGH TANK
36 – 0231 (SLURRY LAS) LINEAR ALKANE SULFONATE	45 – 0228 (IGEPAL CO-7710)
37 – 0236 LIQUID DETERGENT	46 – 0534 & 0240 (FREMIX) LIQUID DETERGENT

CHLORAMIDE SYSTEM
1 – 0354 (COOLING UNIT)
2 – 0143 BRINE TANK
3 – ? BRINE TANK
4 – 0144 BRINE TANK
5 – 0363 (COOLING UNIT)

STORM WATER RETENTION AREA
47 – WATER STORAGE (0218)
48 – WATER STORAGE (0221)
49 – CLEAN WATER (0216)
50 – WATER STORAGE (0220)

PLASTIC MIX TANKS (ELEVATED OFF FLOOR)	
73 – 0603	PLASTIC RESIN
74 – 0601	PLASTIC RESIN
75 – 0602	PLASTIC RESIN
76 – 0600	PLASTIC RESIN
77 – 0604	PLASTIC RESIN
78 – 0544	PLASTIC RESIN
79 – 0605	PLASTIC RESIN
80 – 0598	PLASTIC RESIN

DRY PRODUCT STORAGE
B1 – 0491 FINISHED PRODUCT
B2 – 0492 FINISHED PRODUCT
B3 – 0493 FINISHED PRODUCT
B4 – 0494 FINISHED PRODUCT
B5 – 0495 FINISHED PRODUCT
B6 – 0496 FINISHED PRODUCT
B7 – 0497 FINISHED PRODUCT

CONTINUOUS MIX TANKS	
64 – 0125	DETERGENT
64A – 0124	WET COLLECTOR/DUST SCRUBBER
65 – 0126	DETERGENT
66 – 70646	DETERGENT
67 – 0141	DETERGENT
68 – 0136	DETERGENT
69 – 0138	DETERGENT
70 – 0137	WET COLLECTOR/DUST SCRUBBER
71 – ?	DETERGENT (SPRAY DRYER)
71A – ?	PRP MIX
72 – 10678	DETERGENT (SPRAY DRYER)
72A – ?	PROCESS TANK

PRODUCT STORAGE
57 – 0108 DETERGENT
58 – 0109 DETERGENT
59 – 0110 DETERGENT
60 – 0111 DETERGENT
61 – 0112 DETERGENT
62 – 0114 DETERGENT
63 – 0113 DETERGENT

SILO STORAGE
51 – 0076 (NACL)
52 – 0675 (NACL)
53 – 0087 (SODA ASH)
54 – 0088 (SODA ASH)
55 – 0094 (SILICA)
56 – 0093 (SILICA)

EXPLANATION

■ WASTE MANAGEMENT FACILITIES THAT WERE ASSESSED BY PRE-CLOSURE SAMPLING PROGRAM

■ WASTE MANAGEMENT FACILITIES THAT WERE NOT ASSESSED BY PRE-CLOSURE INVESTIGATIONS

Closure Sampling

U-1 □ WASTE MANAGEMENT UNIT CLOSURE SAMPLE LOCATION AND SAMPLE IDENTIFICATION

HA-2 ● HAND AUGER EXPLORATORY SOIL BORING

AREA II [A] ABOVE GROUND TANK AND AREAS CLOSURE SAMPLING LOCATIONS

BENCHMARK:

CITY OF SOUTHGATE BENCHMARK

THE TOP OF A WATER VALVE HANDHOLE IN THE ASPHALT PARKING LOT AT THE SOUTHWEST CORNER OF RAYO AVENUE AND SOUTHERN AVENUE.

ELEVATION = 104.986

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOTE:
ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE.

REVISIONS		
DATE	DESCRIPTION	BY

ENSR

PLATE 2

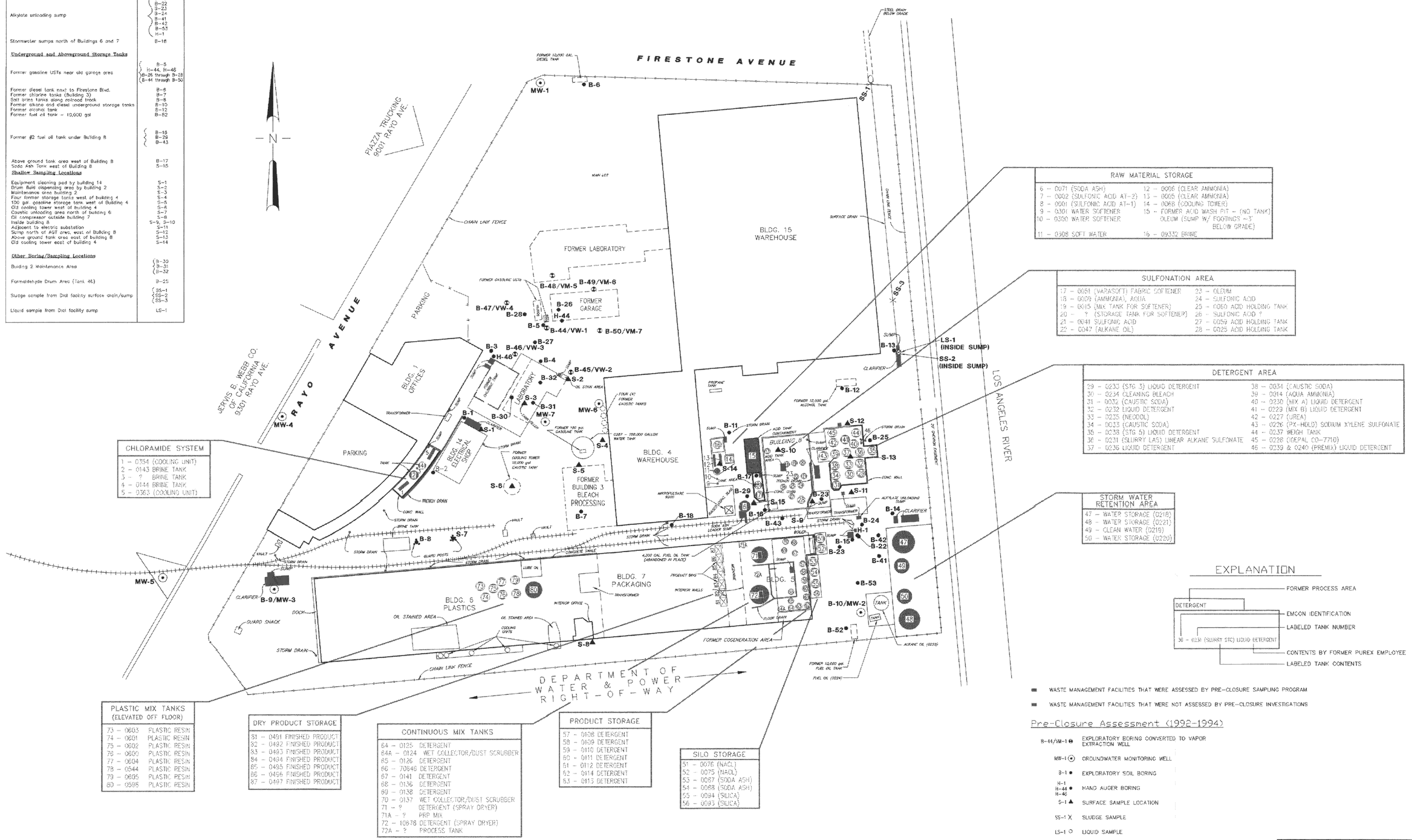
SITE PLAN SHOWING CLOSURE SAMPLE LOCATIONS

The Dial Corporation
9300 Rayo Avenue
City, State

DRAWN: M. SCOP	DATE: 5/14/97	PROJECT NO. 2277-006	REV.
FILE NO. 2277006C	CHK BY:		

Preclosure Assessment (1992-1994)

Sample Location	Sample Designation
Main Facility	
Pumps and Clarifiers	
Clarifier between Buildings 2 and 14	B-1
Trench between Buildings 1 and 14	B-2
Pump sump next to the Building 2 bleach tank	B-3
Poly drum sump north of Building 2 lab	B-4
Clarifiers near south gate(s)	B-5
Sump east of Building 4 and old cooling tower	B-11
Drain sump by Building 15	B-13
Clarifier near stormwater retention tanks	B-14
Alkylate unloading sump	B-15, B-22, B-23, B-24, B-41, B-42, B-53, H-1
Stormwater sumps north of Buildings 6 and 7	B-18
Underground and Aboveground Storage Tanks	
Former gasoline USTs near old garage area	B-8, H-44, H-46, B-26 through B-28, B-44 through B-50
Former diesel tank next to Firestone Blvd.	B-6
Former chlorine tanks (Building 3)	B-7
Salt brine tanks along railroad track	B-8
Former alkane and diesel underground storage tanks	B-10
Former alcohol tank	B-12
Former fuel oil tank - 10,000 gal	B-52
Former #2 fuel oil tank under Building 8	B-16, B-29, B-43
Above ground tank area west of Building 8	B-17
Soda Ash Tank west of Building 8	S-15
Shallow Sampling Locations	
Equipment cleaning pad by building 14	S-1
Drum fluid dispensing area by building 2	S-2
Maintenance area building 2	S-3
Four former storage tanks west of building 4	S-4
100 gal. gasoline storage tank west of Building 4	S-5
Old cooling tower west of building 4	S-6
Caustic unloading area north of building 6	S-7
Oil compressor outside building 7	S-8
Inside building 8	S-9, S-10
Adjacent to electric substation	S-11
Sump north of AST area, west of Building 8	S-12
Above ground tank area east of building 8	S-13
Old cooling tower east of building 4	S-14
Other Boring/Sampling Locations	
Building 2 Maintenance Area	B-30, B-31, B-32
Formaldehyde Drum Area (Tank 46)	B-25
Sludge sample from Dial facility surface drain/sump	SS-1, SS-2, SS-3
Liquid sample from Dial facility sump	LS-1



RAW MATERIAL STORAGE	
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7 - 0002 (SULFONIC ACID AT-2)	13 - 0005 (CLEAR AMMONIA)
8 - 0001 (SULFONIC ACID AT-1)	14 - 0068 (COOLING TOWER)
9 - 0301 WATER SOFTENER	15 - FORMER ACID WASH PIT - (NO TANK)
10 - 0300 WATER SOFTENER	OLEUM (SUMP W/ FOOTINGS ~3' BELOW GRADE)
11 - 0308 SOFT WATER	16 - 09332 BRINE

SULFONATION AREA	
17 - 0051 (VARISOFT) FABRIC SOFTENER	23 - OLEUM
18 - 0009 (AMMONIA) AQUA	24 - SULFONIC ACID
19 - 0015 (MIX TANK FOR SOFTENER)	25 - 0060 ACID HOLDING TANK
20 - ? (STORAGE TANK FOR SOFTENER)	26 - SULFONIC ACID ?
21 - 0041 SULFONIC ACID	27 - 0059 ACID HOLDING TANK
22 - 0047 (ALKANE OIL)	28 - 0025 ACID HOLDING TANK

DETERGENT AREA	
29 - 0233 (STG 3) LIQUID DETERGENT	38 - 0034 (CAUSTIC SODA)
30 - 0234 CLEANING BLEACH	39 - 0014 (AQUA AMMONIA)
31 - 0032 (CAUSTIC SODA)	40 - 0230 (MIX A) LIQUID DETERGENT
32 - 0232 LIQUID DETERGENT	41 - 0229 (MIX B) LIQUID DETERGENT
33 - 0235 (NEODOL)	42 - 0227 (UREA)
34 - 0033 (CAUSTIC SODA)	43 - 0226 (PX-HOLD) SODIUM XYLENE SULFONATE
35 - 0238 (STG 5) LIQUID DETERGENT	44 - 0237 WEIGH TANK
36 - 0231 (SLURRY LAS) LINEAR ALKANE SULFONATE	45 - 0228 (IDEPAL CO-7710)
37 - 0236 LIQUID DETERGENT	46 - 0239 & 0240 (PREMIX) LIQUID DETERGENT

CHLORAMIDE SYSTEM
1 - 0354 (COOLING UNIT)
2 - 0143 BRINE TANK
3 - ? BRINE TANK
4 - 0144 BRINE TANK
5 - 0363 (COOLING UNIT)

STORM WATER RETENTION AREA
47 - WATER STORAGE (0218)
48 - WATER STORAGE (0221)
49 - CLEAN WATER (0219)
50 - WATER STORAGE (0220)

PLASTIC MIX TANKS (ELEVATED OFF FLOOR)		
73 - 0603	PLASTIC RESIN	
74 - 0601	PLASTIC RESIN	
75 - 0602	PLASTIC RESIN	
76 - 0609	PLASTIC RESIN	
77 - 0604	PLASTIC RESIN	
78 - 0544	PLASTIC RESIN	
79 - 0605	PLASTIC RESIN	
80 - 0595	PLASTIC RESIN	

DRY PRODUCT STORAGE
81 - 0491 FINISHED PRODUCT
82 - 0492 FINISHED PRODUCT
83 - 0493 FINISHED PRODUCT
84 - 0494 FINISHED PRODUCT
85 - 0495 FINISHED PRODUCT
86 - 0496 FINISHED PRODUCT
87 - 0497 FINISHED PRODUCT

CONTINUOUS MIX TANKS	
64 - 0125	DETERGENT
64A - 0124	WET COLLECTOR/DUST SCRUBBER
65 - 0126	DETERGENT
66 - 70646	DETERGENT
67 - 0141	DETERGENT
68 - 0136	DETERGENT
69 - 0138	DETERGENT
70 - 0137	WET COLLECTOR/DUST SCRUBBER
71 - ?	DETERGENT (SPRAY DRYER)
71A - ?	PREP MIX
72 - 10678	DETERGENT (SPRAY DRYER)
72A - ?	PROCESS TANK

PRODUCT STORAGE
57 - 0108 DETERGENT
58 - 0109 DETERGENT
59 - 0110 DETERGENT
60 - 0111 DETERGENT
61 - 0112 DETERGENT
62 - 0114 DETERGENT
63 - 0113 DETERGENT

SILO STORAGE
51 - 0076 (NACL)
52 - 0075 (NACL)
53 - 0087 (SODA ASH)
54 - 0088 (SODA ASH)
55 - 0084 (SILICA)
56 - 0093 (SILICA)

EXPLANATION

WASTE MANAGEMENT FACILITIES THAT WERE ASSESSED BY PRE-CLOSURE SAMPLING PROGRAM

WASTE MANAGEMENT FACILITIES THAT WERE NOT ASSESSED BY PRE-CLOSURE INVESTIGATIONS

Pre-Closure Assessment (1992-1994)

- B-44/VM-1 ⊕ EXPLORATORY BORING CONVERTED TO VAPOR EXTRACTION WELL
- MW-1 ⊙ GROUNDWATER MONITORING WELL
- B-1 ● EXPLORATORY SOIL BORING
- H-1, H-44 ●, H-46 HAND AUGER BORING
- S-1 ▲ SURFACE SAMPLE LOCATION
- SS-1 X SLUDGE SAMPLE
- LS-1 ○ LIQUID SAMPLE

BENCHMARK:

CITY OF SOUTHGATE BENCHMARK

THE TOP OF A WATER VALVE HANDHOLE IN THE ASPHALT PARKING LOT AT THE SOUTHWEST CORNER OF RAYO AVENUE AND SOUTHERN AVENUE.

ELEVATION = 104.986

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOTE:
ALL BUILDINGS HAVE BEEN DEMOLISHED AND THE SITE GRADED FLAT. THEY ARE SHOWN ONLY FOR REFERENCE.

REVISIONS		
DATE	DESCRIPTION	BY

ENSR

PLATE 1
SITE PLAN SHOWING PRE-CLOSURE ASSESSMENT LOCATIONS
The Dial Corporation
9300 Rayo Avenue
South Gate, California

DRAWN: M. SCOP	DATE: 5/14/97	PROJECT NO. 2277-006-007	REV.
FILE NO. 2277D006	CHK BY: M. Flack		

APPENDIX A

LIMITATIONS

APPENDIX A
LIMITATIONS

This report has been prepared for the RWQCB, Los Angeles Region, on behalf of our client, The Dial Corporation, as a progress report for closure activities at the facility at 9300 Rayo Avenue, in Southgate, California. In performing our professional services, we have applied present engineering and scientific judgment and used a level of effort consistent with the standard of practice measured on the date of the work and in the local of the project site for similar type studies. ENSR does not guarantee the accuracy or completeness of data collected by third parties. ENSR makes no warranty, express or implied, concerning any of the materials or services furnished.

The analyses and interpretations in this report have been developed, based on review of existing information pertaining to the site and review of analytical results from ground water samples collected from discrete locations. It should be recognized that subsurface soil and groundwater can vary laterally and with depth below a given site, and that contamination can go undetected in any limited subsurface investigation.

APPENDIX B

CERTIFIED ANALYTICAL LABORATORY REPORTS: CLOSURE SAMPLES

(SEE VOLUME II)

APPENDIX C

CERTIFIED ANALYTICAL LABORATORY REPORTS: POST-CLOSURE SAMPLES

(SEE VOLUME II)

APPENDIX D

WASTE MANIFESTS

Submitted to:

FUGRO MCCLELLAND
5855 OLIVAS PARK DRIVE
VENTURA, CALIFORNIA 93003

Attention: MIKE FLACK

Project:

THE DIAL CORPORATION
9300 RAYO AVENUE
SOUTH GATE, CALIFORNIA

TEG JOB NO'S. A96-299/D96-054

Submitted by:

TEG, THE ENVIRONMENTAL GROUP

SPECIAL WASTE SHIPMENT RECORD

Butterfield Station Regional Landfill Facility
40404 South 99th Avenue
Mobile, Arizona 85239
602/256-0630 FAX 602/256-0639
A Division of Waste Management of Arizona, Inc.

Shipment # 96053

6/30/96 WMA Profile # 286520

1. Work site name and address		Emergency telephone
DIAL 9300 RAYO AVE SOUTHGATE CA	A96-299A DIAL	(310) 533-6702

2. Contractor name and address	Contractor's telephone no.
TEG. The Environmental Group 4710 South Eastern Avenue City of Commerce, CA 90040	(213) 726-9696

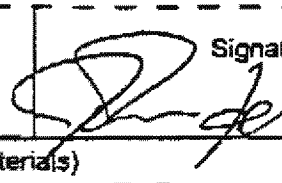
3a. Owner's name and mailing address	3b. Disposal Site	Owner's telephone no.
THE DIAL CORP. 1850 NORTH CENTRAL AVENUE PHEONIX, AZ Attn: MICHAEL CAVANAUGH	Butterfield Station Landfill 40404 S. 99th Avenue Mobile, AZ 85239	(602) 207-5760

4a. Address of responsible agency	4b. Address of responsible agency
Maricopa County - Division of Pollution Control **2406 S. 24th Street Suite E-214** **Phoenix, Arizona 85034 602-506-6708**	**ADEQ - Air Quality, Asbestos Coordinator** **3033 N. Central Avenue** **Phoenix, Arizona 85012 602-207-2301**

5. Description of materials	6. Containers No.	6. Containers Type	7. Total quantity Cubic Yards	7. Total quantity Tons
Non-Friable Asbestos Only **Asbestos, 9, NA2212, III**	1	CM	35	

8. **Special handling instructions:**
Do not break bags or cause dust, avoid breathing dust. Bury separately and cover with backfill.

9. CONTRACTOR'S / GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

Printed/typed name & title	Signature	Month/Day/Year
JOHN FERGUSON PROJECT MANAGER		05 03 196

10. Transporter 1 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
KVS TRANSPORTATION, INC. PO BOX 5295 BAKERSFIELD, CA 93388 (805) 589-5220		05 10 8 196

11. Transporter 2 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
		/ /

12. Discrepancy indication space

13. Waste disposal site Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.

Printed/typed name & title	Signature	Month/Day/Year
McDaniel		5/10 196

White/Owner Yellow/Contractor Green/Transporter Pink/WCHD Gold/BSLF

Butterfield Station Regional Landfill Facility
40404 South 99th Avenue
Mobile, Arizona 85239
602/256-0630 FAX 602/256-0639
A Division of Waste Management of Arizona, Inc.

Shipment #[illegible]

T.E.G.

WMA Profile # _____

1. Work site name and address		Emergency telephone
[illegible] RAYO AVE [illegible] CA	A96-293A DEAL	(210) [illegible]
2. Contractor name and address		Contractor's telephone no.
[illegible]. The Environmental Group 1710 South Eastern Avenue [illegible]		
3a. Owner's name and mailing address	3b. Disposal Site	Owner's telephone no.
[illegible] 1850 NORTH CENTRAL AVENUE PHOENIX, AZ ATTN: MICHAEL CAVANAUGH	Butterfield Station Landfill 40404 S. 99th Avenue Mobile, AZ 85239	[illegible]

4a. Address of responsible agency	4b. Address of responsible agency
Maricopa County - Division of Pollution Control 2406 S. 24th Street Suite E-214 Phoenix, Arizona 85034 602-506-6708	**ADEQ - Air Quality, Asbestos Coordinator 3033 N. Central Avenue Phoenix, Arizona 85012 602-207-2301**

5a. Description of materials	6. Containers No.	6. Containers Type	7. Total quantity Cubic Yards	7. Total quantity Tons
[illegible]				
Non-Friable Asbestos Only Asbestos, 9, NA2212, III	1	cm	35 y	

8. **Special handling instructions:** TEG 1 of 2
Do not break bags or cause dust, avoid breathing dust. Bury separately and cover with backfill.

9. CONTRACTOR'S / GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

Printed/typed name & title	Signature	Month/Day/Year
JOHN FERGUSON PROJECT MANAGER	[signature]	05 03 96

10. Transporter 1 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
[illegible] TRANSPORTATION, INC. [illegible] [illegible] [illegible]	[signature]	/ / 05/06/96

11. Transporter 2 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
Dennis Bartt	Dennis Bartt	06/06/96

12. Discrepancy indication space

13. Waste disposal site Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.

Printed/typed name & title	Signature	Month/Day/Year
[illegible]	[signature]	01/7/96

White/Owner Yellow/Contractor Green/Transporter Pink/MCHD Gold/BSLF

05/09/96 15:18 ☎602 256 0639 BUTTERFIELD 005

SPECIAL WASTE SHIPMENT RECORD

Butterfield Station Regional Landfill Facility
40404 South 99th Avenue
Mobile, Arizona 85239
602/256-0630 FAX 602/256-0639
A Division of Waste Management of Arizona, Inc.

Shipment # 96-055

WMA Profile # 4/30/96 286520

1. Work site name and address	Emergency telephone
DIAL 9300 RAYO AVE SOUTHGATE CA A96-299A DIAL	(310) 533-6702
2. Contractor name and address TEG, The Environmental Group 4710 South Eastern Avenue City of Commerce, CA 90040	Contractor's telephone no. (213) 726-9696

3a. Owner's name and mailing address	3b. Disposal Site	Owner's telephone no.
THE DIAL CORP. 1850 NORTH CENTRAL AVENUE PHEONIX, AZ Attn:MICHAEL CAVANAUGH	Butterfield Station Landfill 40404 S. 99th Avenue Mobile, AZ 85239	(602) 207-5760

4a. Address of responsible agency	4b. Address of responsible agency
Maricopa County - Division of Pollution Control **2406 S. 24th Street Suite E-214** **Phoenix, Arizona 85034 602-506-6708**	**ADEQ - Air Quality, Asbestos Coordinator** **3033 N. Central Avenue** **Phoenix, Arizona 85012 602-207-2301**

5a. Description of materials	6. Containers No.	Type	7. Total quantity Cubic Yards	Tons
TRANSITE				
Non-Friable Asbestos Only **Asbestos, 9, NA2212, III**	01	CM	35	

8. Special handling instructions:
Do not break bags or cause dust, avoid breathing dust. Bury separately and cover with backfill.

9. CONTRACTOR'S / GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

Printed/typed name & title	Signature	Month/Day/Year
JOHN FERGUSON PROJECT MANAGER,	[signature]	05 03 96

10. Transporter 1 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
KVS TRANSPORTATION, INC. PO BOX 5295 BAKERSFIELD, CA 93388 (805) 589-5220	Dave Wilson	05/08/96

11. Transporter 2 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
		/ /

12. Discrepancy indication space

13. Waste disposal site Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.

Printed/typed name & title	Signature	Month/Day/Year
M H Haines	M Haines	5 9 96

White/Owner Yellow/Contractor Green/Transporter Pink/WMI Gold/BSRF

SPECIAL WASTE SHIPMENT RECORD

Butterfield Station Regional Landfill Facility
40404 South 99th Avenue
Mobile, Arizona 85239
602/256-0630 FAX 602/256-0639
A Division of Waste Management of Arizona, Inc.

Shipment # 96-056

WMA Profile # 286520 4/29/96

1. Work site name and address	Emergency telephone
DIAL 9300 RAYO AVE SOUTHGATE CA A96-299A DIAL	(310) 533-6702
2. Contractor name and address	**Contractor's telephone no.**
TBG. The Environmental Group 4710 South Eastern Avenue City of Commerce, CA 90040	(213) 726-0191
3a. Owner's name and mailing address	**3b. Disposal Site** / **Owner's telephone no.**
THE DIAL CORP. 1850 NORTH CENTRAL AVENUE PHOENIX. AZ Attn:MICHAEL CAVANAUGH	Butterfield Station Landfill 40404 S. 99th Avenue Mobile, AZ 85239 (602) 207-5760
4a. Address of responsible agency	**4b. Address of responsible agency**
Maricopa County - Division of Pollution Control 2406 S. 24th Street Suite E-214 Phoenix, Arizona 85034 602-506-6708	ADEQ - Air Quality, Asbestos Coordinator 3033 N. Central Avenue Phoenix, Arizona 85012 602-207-2301

5a. Description of materials	6. Containers No.	6. Containers Type	7. Total quantity Cubic Yards	7. Total quantity Tons
TRANSITE Non-Friable Asbestos Only Asbestos, 9, NA2212, III	1	CM	25	

8. **Special handling instructions:**
Do not break bags or cause dust, avoid breathing dust. Bury separately and cover with backfill.

9. CONTRACTOR'S / GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

Printed/typed name & title	Signature	Month/Day/Year
JOHN FERGUSON PROJECT MANAGER		05 03 96

10. Transporter 1 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
KVS TRANSPORTATION, INC. PO BOX 5295 BAKERSFIELD, CA 93388 (805) 589-5220		05 / 08 / 96

11. Transporter 2 (Acknowledgment of receipt of materials)

Printed/typed name & title, address, telephone no.	Signature	Month/Day/Year
		/ /

12. Discrepancy indication space

13. Waste disposal site Operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.

Printed/typed name & title	Signature	Month/Day/Year
		5/10/96

White/Owner Yellow/Contractor Green/Transporter Pink/MCHD Gold/BSLF

SOLID WASTE SECTION - PROGRAM DEVELOPMENT & RECYCLING UNIT
3033 North Central Phoenix, Arizona 85012

SPECIAL WASTE MANIFEST # 018096

GENERATOR

1. Generator's AZ ID No.
EXEMPT-Out of State

2. Emergency Response Notification Phone Number T.E.G. (213) 726-9696

3. Generator's Name and Mailing Address
A96-299A:
DIAL
THE DIAL CORP.
1850 NORTH CENTRAL AVENUE
PHEONIX AZ
(602) 207-5760
EPA ID Number: CAD008295666
CA Manifest # 95741520
WMNA Profile # 28652
Attn:MICHAEL CAVANAUGH
Generator's Phone Number and Area Code

4. Transporter 1 Company Name and Mailing Address
KVS TRANSPORTATION, INC.
Transporter's AZ ID No.
Transporter's Phone No. (805) 589-5220

5. Transporter 2 Company Name and Mailing Address
Transporter's AZ ID No.
Transporter's Phone No.

6. Primary Receiving Facility Name and Address (physical site location, if different)
WASTE MANAGEMENT-BUTTERFIELD STATE L
40404 S. 99TH AVE.
MOBILE AZ 85239
Facility's AZ ID No.
Facility's Phone No. (602) 256-0630

7. Alternate Receiving Facility Name and Address (physical site location, if different)
Facility's AZ ID No.
Facility's Phone No.

8. U.S. DOT description. (if applicable)(Non-DOT regulated materials enter shipping name, physical state and description of all contents of waste).	Mark "X" if Haz. Mat.	Containers No.	Total Quantity	Unit Wt/Vol
R.Q. ASBESTOS, 9, NA 2212, PG III		1	35	Y

9. Additional information on transportation, treatment, storage, or disposal
DO NOT BREAK BAGS OR CAUSE DUST. AVOID BREATHING DUST. BURY SEPARATELY WITH REFUSE. APPROVED RESPIRATORY EQUIPMENT AND PROTECTIVE CLOTHING REQUIRED; ERG-31.

10. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and governmental regulations.

Printed/Typed Name [illegible] Signature [signature] MO DAY YR 10 05 31 96

TRANSPORTER

11. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name SHAWN CONNER Signature [signature] MO DAY YR 10 5 08 96

12. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name Signature MO DAY YR

FACILITY

13. Discrepancy Indication Space

14. Facility Owner or Operator: Certification of receipt of special waste materials covered by this manifest except as noted in above item.

Printed/Typed Name M. Daniel Signature M. Daniel MO DAY YR 5 10 96

ADEQ/SWS/PDU/RU
SPW 10 (12/92)

ORIGINAL - DO NOT DETACH RETURN TO GENERATOR WITHIN 30 DAYS

002630

A002530

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION – COMPLIANCE SECTION

3033 N. Central Ave. Phoenix, Arizona 85012

ASBESTOS NESHAP WASTE SHIPMENT RECORD

GENERATOR

1a. Work Site Name, Address & County
A96-299A: DIAL
9300 RAYO AVE
SOUTHGATE CA
186520

1b. Owner's Name and Mailing Address
THE DIAL CORP.
1850 NORTH CENTRAL AVENUE
PHEONIX AZ 85004-1
Attn:JOHN FERGUSON
Owner's Telephone No. (602) 207-5535

2. Operator's Name & Mailing Address
TEG, The Environmental Group
4255 S. Eastern Blvd.
Citv of Commerce, CA 90040
Operator's Telephone No. (213) 726-9696

3. Waste Disposal Site (WDS) Name, Address and Physical Location
WASTE MANAGEMENT-BUTTERFIELD STATE LANDFI
40404 S. 99TH AVE.
MOBILE AZ 85239
WDS Telephone No. (602) 256-0630

4a. Asbestos NESHAP Regulatory Agency Name & Address for Work Site
Maricopa County-Division of Pollution Control
2406 S. 24th Street, Suite E-214
Phoenix, Arizona 85034 602-506-6708

4b. Asbestos NESHAP Regulatory Agency for WDS: Name & Address
ADEQ-Air Quality, Asbestos Coordinator
3033 N. Central Avenue
Phoenix, Arizona 85012 602-207-2301

5. Description of Materials	6. Containers: Number	Containers: Type	7. Total Quantity Removed in m^3 (yd^3)
NON-FRIABLE ASBESTOS			
Friable Asbestos Material			
Nonfriable Asbestos Material	01	CM	30yds

8a. Special Transportation, Treatment, Storage or Disposal Information: BAG AND TARP SECURELY

8b. Bill of Lading Information

8c. Alternate Waste Disposal Site Information

8d. Emergency Response Telephone No. T.E.G. (213) 726-9696

9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

NOTE: The waste generator/operator must retain a copy of this form.

Printed/Typed Name & Title: JOHN FERGUSON, MANAGER TOOLSUPPLY — Signature — MO DAY YR: 08 05 96

TRANSPORTER

10. Transporter 1 (Acknowledgement of Receipt of Materials)
KVS TRANSPORTATION, INC.
PO Box 5295
Bakersfield CA 93388
(805) 589-5220
Printed/Typed Name, Title, Address & Telephone No. — Signature — MO DAY YR: 08 19 96

11. Transporter 2 (Acknowledgement of Receipt of Materials)
Printed/Typed Name, Title, Address & Telephone No. — Signature — MO DAY YR

DISPOSAL SITE

12. Discrepancy Indication Space

13. Waste Disposal Site Owner or Operator Certification of receipt of special waste materials covered by this manifest except as noted in Item 12
Signature — MO DAY YR: 8 19 9

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION – COMPLIANCE SECTION

3033 N. Central Ave. Phoenix, Arizona 85012

ASBESTOS NESHAP WASTE SHIPMENT RECORD

GENERATOR

1a. Work Site Name, Address & County
D96-054A: DIAL FACTORY
9300 RAYO
SOUTHGATE CA

1b. Owner's Name and Mailing Address
THE DIAL CORPORATION
1850 NORTH CENTRAL AVENUE
PHOENIX AZ 85077
Attn:JOHN FERGUSON STA 1
Owner's Telephone No. 602 207-5198

2. Operator's Name & Mailing Address
TEG, The Environmental Group
4710 S. Eastern Blvd.
City of Commerce, CA 90040
Operator's Telephone No. 213 726-9696

3. Waste Disposal Site (WDS) Name, Address and Physical Location
WASTE MANAGEMENT-BUTTERFIELD STATE LANDFI
40404 S. 99TH AVE.
MOBILE AZ 85239
WDS Telephone No. (602) 256-0630

4a. Asbestos NESHAP Regulatory Agency Name & Address for Work Site
Maricopa County-Division of Pollution Control
2406 S. 24th Street, Suite E-214
Phoenix, Arizona 85034 602-506-6708

4b. Asbestos NESHAP Regulatory Agency for WDS: Name & Address
ADEQ-Air Quality, Asbestos Coordinator
3033 N. Central Avenue
Phoenix, Arizona 85012 602-207-2301

5. Description of Materials	6. Containers: Number	Containers: Type	7. Total Quantity Removed in m^3 (yd^3)
NON-FRIABLE ASBESTOS			
Friable Asbestos Material			
Nonfriable Asbestos Material			40 yd No

8a. Special Transportation, Treatment, Storage or Disposal Information: BAG AND TARP SECURELY, Profile#286520

8b. Bill of Lading Information: P.O. WA05609

8c. Alternate Waste Disposal Site Information

8d. Emergency Response Telephone No. T.E.G. (213) 726-9696

9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

NOTE: The waste generator/operator must retain a copy of this form.

Printed/Typed Name & Title: [illegible] Signature: [illegible] MO. DAY. YR 10.15.96

TRANSPORTER

10. Transporter 1 (Acknowledgement of Receipt of Materials)
THE ENVIRONMENTAL GROUP
4710 S. Eastern Ave.
City of Commerce CA 90040
(213) 726-9696
Printed/Typed Name, Title, Address & Telephone No. | Signature | MO. DAY. YR

11. Transporter 2 (Acknowledgement of Receipt of Materials)
KVS TRANSPORTATION INC
PO Box 5295
Bakersfield CA 93388
(805) 589-5220
Printed/Typed Name, Title, Address & Telephone No. | Signature | MO. DAY. YR 10.21.96

DISPOSAL SITE

12. Discrepancy Indication Space
Two copies of manifest missing.

13. Waste Disposal Site Owner or Operator: Certification of receipt of special waste materials covered by this manifest except as noted in Item 12.
Printed/Typed Name & Title: [illegible] Signature: [illegible] MO. DAY. YR 10.24.96

ADEQ/AQD/CS
NESHAP 001/_____

TRANSPORTER 1: RETAIN THIS COPY SHOWING RECEIPT BY WDS OR OTHER

Environmental Protection Agency
OMB No. 2050-0039 (Expires 9-30-96)
type. Form designed for use on elite (12-pitch) typewriter.

See instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C A L 0 0 0 1 5 6 0 7 3 9
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: A06-067A: 10880 WILSHIRE FLOOR 4
10880 PROPERTY CORPORATION
10880 WILSHIRE BLVD : LOS ANGELES, CA 90024
4. Generator's Phone (310) 234-5504 Attn: ANDY TROWBRIDGE

A. State Manifest Document Number: 96062913
B. State Generator's ID: CAL 0 0 0 1 5 6 0 7 3 0

5. Transporter 1 Company Name: KCS TRANSPORTATION, INC
6. US EPA ID Number: C A D 9 8 2 4 9 5 6 0 8
C. State Transporter's ID
D. Transporter's Phone (805) 589-5220

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address:
CALIFORNIA ASBESTOS MONOFIL
GRAYMARS FERRY ROAD
COPPEROPOLIS, CA 95228
10. US EPA ID Number: C A D 0 0 0 0 0 0 2 7 2 4 1
G. State Facility's ID
H. Facility's Phone (800) 852-4031

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. R.Q. ASBESTOS, 9, NA 2212, PG II	3914	CW	00068	Y	State 151 / EPA/Other
b. R.Q. ASBESTOS 9, NA 2212 PG II	356	DA	00025	Y	State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
K. Handling Codes for Wastes Listed Above: a. 03

15. Special Handling Instructions and Additional Information
DO NOT BREAK BAGS OR CAUSE DUST. AVOID BREATHING DUST. BURY SEPARATELY WITH REFUSE. APPROVED RESPIRATORY EQUIPMENT AND PROTECTIVE CLOTHING REQUIRED. ER-
IN CASE OF EMERGENCY: T.E.G. (213) 726-9656 4/23/96

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
GEORGE V. CAREY	[signature]			96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID K GAGNE	[signature]	10		96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
CLIFTON S. HINTON	Clifton S. Hinton	10	18	96

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (1/95)
EPA 8700—22

Green: TRANSPORTER

Form designed for use on elite (12-pitch) typewriter.

Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of	Information in the shaded areas is not required by Federal law.
C A D 0 0 1 1 7 5 6 6 6	2 0	1 1	

3. Generator's Name and Mailing Address: A06-067A: 10880 WILSHIRE FLOOR
10880 PROPERTY CORPORATION
10880 WILSHIRE BLVD.; LOS ANGELES, CA 90024

4. Generator's Phone (310) 234-5604 Attn: ANDY TROWBRIDGE

A. State Manifest Document Number: 96062912

B. State Generator's ID: [illegible]

5. Transporter 1 Company Name: K/S TRANSPORTATION, INC.

6. US EPA ID Number: C A D 9 8 2 4 3 5 6 6 8

C. State Transporter's ID: N/A

D. Transporter's Phone (805) 589-5220

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address:
CALIFORNIA ASBESTOS MONOFILL
[illegible] FERRY ROAD
COPPEROPOLIS, CA 95228

10. US EPA ID Number: C A L 0 0 0 0 2 [illegible] 1

G. State Facility's ID: CAL000027741

H. Facility's Phone (800) 852-4031

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. R.Q. ASBESTOS, 9, NA 2212, PG III	435	CF	00048		State: 151 / EPA/Other
b. R.Q. ASBESTOS, 9, NA 2212. PG III	196	DM	00021	Y	State: 151 / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above: a. 03 b. 03 c. d.

15. Special Handling Instructions and Additional Information
DO NOT BREAK BAGS OR CAUSE DUST. AVOID BREATHING DUST. [illegible]
[illegible] APPROVED RESPIRATORY EQUIPMENT AND PROTECTIVE CLOTHING [illegible]
IN CASE OF EMERGENCY: T.E.G. (213) 724-9496 [illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
GEORGE V. CAREY	[signature]	[illegible]	[illegible]	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID K. GAGE	[signature]	[illegible]	[illegible]	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
CLIFTON T. HIATT	[signature]	[illegible]	[illegible]	[illegible]

GENERATOR / TRANSPORTER / FACILITY

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (1/95)
EPA 8700—22

Green: TRANSPORTER

Form designed for use on elite (12-pitch) typewriter.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CA[illegible]	[illegible]	1 of 1	A. State Manifest Document Number 9606291[illegible]

3. Generator's Name and Mailing Address A06-067A: 10880 WILSHIRE FLOOR

10880 PROPERTY CORPORATION
10880 WILSHIRE BLVD., LOS ANGELES, CA 90024

4. Generator's Phone (310) [illegible]-[illegible] Attn: ANDY TROWBRIDGE

B. State Generator's ID CAD[illegible]04430

5. Transporter 1 Company Name: [illegible]VS TRANSPORTATION, INC.

6. US EPA ID Number: CAD[illegible]

C. State Transporter's ID [illegible]

D. Transporter's Phone (805) 589-5220

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
CALIFORNIA ASBESTOS MONOFIL
O'BYRNES FERRY ROAD
COPPEROPOLIS, CA 95228

10. US EPA ID Number: CAL000[illegible]

G. State Facility's ID CAL000[illegible]

H. Facility's Phone (800) 852-4031

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. R.Q. ASBESTOS, 9, NA 2212, PG II	5[illegible]	CF	00065	Y	State 151 EPA/Other
b. R.Q. ASBESTOS, 9, NA 2212, PG II	1	[illegible]	00117	Y	State 151 EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above
a. 03 b. 03
c. d.

15. Special Handling Instructions and Additional Information
[illegible] BREAK BAGS IN CAUSE DUST. AVOID BREATHING DUST. BURY SEPARATELY WITH [illegible]. APPROVED RESPIRATORY EQUIPMENT AND PROTECTIVE CLOTHING REQUIRED. [illegible]
IN CASE OF EMERGENCY: [illegible] (213) [illegible] 9-[illegible]-96

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
GEORGE V. CAREY	[signature]	[illegible]	[illegible]	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
David Boughton	[signature]	[illegible]	[illegible]	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Clifton S. Hinton	[signature]	[illegible]	[illegible]	96

GENERATOR / TRANSPORTER / FACILITY

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER, 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (1/95)
EPA 8700—22

Green: TRANSPORTER RETAINS

Form Approved OMB No. 2050-0039 [illegible]
Please print or type. Form designed for use on elite (12-pitch) typewriter.

Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAD008245869	6 2 9 4 8	1 of 1	

3. Generator's Name and Mailing Address: 096-054A: DIAL FACTORY
THE DIAL CORPORATION
1850 NORTH CENTRAL AVENUE; PHOENIX, AZ 85077
4. Generator's Phone (602) 207-5198 Attn: JOHN FERGUSON STA 1722

A. State Manifest Document Number: 9606294
B. State Generator's ID: AZ H A H 0 3 6 0 0 5 6 0 1

5. Transporter 1 Company Name: THE ENVIRONMENTAL GROUP
6. US EPA ID Number: CAL971568630
C. State Transporter's ID: [illegible]
D. Transporter's Phone: (213) 726-9696

7. Transporter 2 Company Name: LFR ENVIRONMENTAL SERVICES IN
8. US EPA ID Number: CAD981440264
E. State Transporter's ID: [illegible]
F. Transporter's Phone: (818) 960-6106

9. Designated Facility Name and Site Address: DEMENNO KERDOON
2000 NORTH ALAMEDA
COMPTON, CA 90222
10. US EPA ID Number: CAT080013352
G. State Facility's ID: CAT080013352
H. Facility's Phone: (310) 537-7100

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste Number
a. NON-RCRA HAZARDOUS WASTE LIQUID (ALKENE OILS, WATER)	001	DM	00500	G	State 223; EPA/Other [illegible]
b.					State [illegible]; EPA/Other [illegible]
c.					State [illegible]; EPA/Other [illegible]
d.					State [illegible]; EPA/Other [illegible]

J. Additional Descriptions for Materials Listed Above
11A. ALKENE OIL 5% WATER 95%

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
USE APPROVED APPROPRIATE PROTECTIVE GEAR WHEN HANDLING WASTE.
IN CASE OF EMERGENCY PHONE (213) 726-9696 & CALL 911.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
JOHN FERGUSON, MGR	[signature] MGR 55H	10	15	9

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Jeffrey Nuno	[signature]	10	15	9

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
J. Ignacio Somoza	Ignacio Somoza	10	23	9

19. Discrepancy Indication Space
96

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Joselin Collado	[signature]	10	28	9

DO NOT WRITE BELOW THIS LINE.

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

GENERATOR — TRANSPORTER — FACILITY

See instructions on back of page 6.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

[redacted]

3. Generator's Name and Mailing Address

THE DIAL CORP

4. Generator's Phone 602-207-3760

5. Transporter 1 Company Name — US EPA ID Number

KVS TRANSPORTATION, INC.

7. Transporter 2 Company Name — US EPA ID Number

9. Designated Facility Name and Site Address — 10. US EPA ID Number

WASTE MANAGEMENT BUTTERFIELD STATION

40404 S. 99TH AVE

MOBILE, ARIZONA 85239

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. RQ, ASBESTOS, 9, NA 2212, PG III ... 01 ... 17025

b.

c.

d.

[redacted]

15. Special Handling Instructions and Additional Information

DO NOT BREAK BAGS OR CONTAINERS. AVOID BREATHING DUST. BURY SEPARATELY WITH ... PROTECTIVE CLOTHING REQUIRED; ERG-31.

4/30/96 286520 sc.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name — Signature — Month Day Year: 05 03 96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year: 05 03 96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name — Signature — Month Day Year: 05 10 96

DO NOT WRITE BELOW THIS LINE.

0C 33638

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS. (Generators who submit hazardous waste for transport out-of-state, produce completed copy of this copy and send to DTSC within 30 days.)

IN CASE OF EMERGENCY OR SPILL, CONTACT THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD982495600 Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: A96-299A: DTAL. DTAL CORP. 1850 NORTH CENTRAL AVENUE: PHEONIX. AZ
4. Generator's Phone: (602) 207-5760 Attn:MICHAEL CAVANAUGH

5. Transporter 1 Company Name: KVS TRANSPORTATION, INC.
6. US EPA ID Number: CAD982495600
7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address: WASTE MANAGEMENT-BUTTERFIELD STATE LA
40404 S. 99TH AVE.
MOBILE. A 85239
10. US EPA ID Number: AZD984834819
F. Transporter's Phone: (805) 589-5220
H. Facility's Phone: (602) 256-0630

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	State	EPA/Other
a. R.Q. ASBESTOS, 9, NA 2212, PG III	001	CM	35	Y		
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
K. Handling Codes for Wastes Listed Above: a. 03 b. c. d.

15. Special Handling Instructions and Additional Information
DO NOT BREAK BAGS OR CAUSE DUST. AVOID BREATHING DUST. BURY SEPARATELY WITH REFUSE. APPROVED RESPIRATORY EQUIPMENT AND PROTECTIVE CLOTHING REQUIRED; ERG-31.
IN CASE OF EMERGENCY: T.E.G. (213) 726-9696 4/30/96 40419

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
JOHN FERGUSON		05	13	96

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
DAVID WILSON		05	18	96

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Tredessa Schroder		05	13	96

DO NOT WRITE BELOW THIS LINE.

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-[illegible]-755

DTSC 8022A (1/93)
EPA 8700-22

TPS Technologies Soil Recycling
Non-Hazardous Soils

Date of Shipment:	Responsible for Payment:	Transporter Truck #	Facility #:	Given by TPS:	Load #
	Contractor		A07	07748	007

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
DIAL CORPORATION 1850 N. CENTRAL AVE. PHOENIX, AZ 85077 USA	Person to Contact:	Customer Account Number with TPS:

Consultant's Name and Billing Address:	Consultant's Phone #:	
THE ENVIRONMENTAL GROUP 4710 S. EASTERN AVE. LOS ANGELES, CA 90040 USA	Person to Contact:	
	FAX#:	Customer Account Number with TPS:

Generation Site (Transport from): (name & address)	Site Phone #:	BTEX Levels
DIAL CORPORATION 9300 RAYO ST. SOUTH GATE, CA 90280 USA	Person to Contact: JOHN FERGUSON	TPH Levels
	FAX#:	AVC Levels

Designated Facility (Transport to): (name & address)	Facility Phone #:	Facility Permit Numbers:
TPS TECHNOLOGIES 12328 HIBISCUS AVE. Adelanto, CA 92301 USA	800-862-8001	
	Person to Contact: DARREN R. BARTLETT	
	FAX#: 619-246-8004	

Transporter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
BOB FIDLER INTERNATIONAL 249 ARDMORE ST. SAN BERNARDINO, CA 92404 USA	(909) 886-2402	
	Person to Contact: BOB FIDLER	Transporter's DOT No.:
	FAX#: (909) 881-1223	Customer Account Number with TPS: 7BOBFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% over ☐	Gas ☐ Diesel ☐ Other ☐			67860	27860	40000
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					20.00

List any exceptions to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name:	Generator ?	Consultant ?	Signature and Date:	Month	Day	Year
Steve Dixon - as Owner Agent				10	2	96

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and Date:	Month	Day	Year

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and Date:
D. Bartlett/S. Clements	10-1-96

Please Print or Type

TRANSPORTER'S COPY

Manifest — **TPS Technologies Soil Recycling** — Non-Hazardous Soils

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Contractor	82	A07	07748	006

Generator's Name and Billing Address:		
DIAL CORPORATION 1850 N. CENTRAL AVE. PHOENIX, AZ 85077 USA	Generator's Phone #: Person to Contact: FAX#:	Generator's US EPA ID No.: Customer Account Number with TPS: ZDIALCO
Consultant's Name and Billing Address: THE ENVIRONMENTAL GROUP 4710 S. EASTERN AVE LOS ANGELES, CA 90040 USA	Consultant's Phone #: Person to Contact: FAX#:	Customer Account Number with TPS: ZTHEENV
Generation Site (Transport from): (name & address) DIAL CORPORATION 9300 RAYO ST. SOUTH GATE, CA 90280 USA	Site Phone #: ~~...-3198~~ Person to Contact: ~~JOHN FERGUSON~~ FAX#:	BTEX Levels: TPH Levels: AVG. Levels:
Designated Facility (Transport to): (name & address) TPS TECHNOLOGIES 12328 HIBISCUS AVE. Adelanto, CA 92301 USA	Facility Phone #: 800-862-3001 Person to Contact: DARREN R. BARTLETT FAX#: 619-246-8004	Facility Permit Numbers:
Transporter Name and Mailing Address: BOB FIDLER INTERNATIONAL 249 ARDMORE ST. SAN BERNARDINO, CA 92404 USA	Transporter's Phone #: (909) 886-2432 Person to Contact: BOB FIDLER FAX#: (909) 881-1223	Transporter's US EPA ID No.: [illegible] Transporter's DOT No.: Customer Account Number with TPS: ZBOBFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			76440	29600	46840
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					23.42

List any exception to items listed above: 14357

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Steve Dixon - as owner Agent — Generator ☐ Consultant ☐ — Signature and date: [signature] — Month 10 Day 31 Year 96

Transporter — *Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.*

Print or Type Name: David J. Freeman — Signature and date: David J. Freeman — Month 10 Day 31 Year 96

Recycling Facility — Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: D. Bartlett/S. Clements — Signature and date: Sandy Clements 10-31-96

Please print or type

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

Manifest #

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPS:	Load #
10-31-94	Contractor	10	A07	87748	005

Generator and/or Consultant

Generator's Name and Billing Address:
DIAL CORPORATION
1850 N. CENTRAL AVE.
PHOENIX, AZ 85077 USA

Generator's Phone #:
Generator's US EPA ID No.
Person to Contact:
FAX#:
Customer Account Number with TPS: 7DIALCO

Consultant's Name and Billing Address:
THE ENVIRONMENTAL GROUP
4710 S. EASTERN AVE.
LOS ANGELES, CA 90040 USA

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number with TPS: 7THEENV

Generation Site (Transport from) (name & address):
DIAL CORPORATION
9300 RAYO ST.
SOUTH GATE, CA 90703 USA

Site Phone #: (800) 287-5190
Person to Contact: JOHN FERGUSON
FAX#:
BTEX Levels
TPH Levels
AVG. Levels

Designated Facility (Transport to) (name & address):
TPS TECHNOLOGIES
12328 HIBISCUS AVE.
Adelanto, CA 92301 USA

Facility Phone #: 800-862-8001
Facility Permit Number:
Person to Contact: DARREN R. BARTLETT
FAX#: 619-246-8004

Transporter Name and Mailing Address:
BOB FIDLER INTERNATIONAL
249 ARDMORE ST.
SAN BERNARDINO, CA 92404 USA

Transporter's Phone #: (909) 886-2432
Transporter's US EPA ID No.: DAL10
Person to Contact: BOB FIDLER
FAX#: (909) 881-1223
Transporter's DOT No.:
Customer Account Number with TPS: 7BOBFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			64540	28120	36020
Silt ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					18.01

Use only metric tons to denote total shipment

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Steve Dixon - As owner Agent | Signature and Date: | Month: 10 | Day: 31 | Year: 94

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery of such soil.

Print or Type Name: MARTIN KIEFER | Signature and Date: | Month: 10 | Day: 31 | Year: 94

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: D. Bartlett/S. Clements | Signature and Date: 10-31-94

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

TPS FACILITY COPY

Manifest

TPS Technologies Soil Recycling

Non-Hazardous Soils

Date of Shipment:

Responsible for Payment: Contractor

Transporter Truck #:

Facility #: A07

Given by TPS: 07748

Load #: 004

Generator's Name and Billing Address:
DIAL CORPORATION
1850 N. CENTRAL AVE.
PHOENIX, AZ 85077 USA

Generator's Phone #:
Generator's US EPA ID No.:
Person to Contact:
FAX#:
Customer Account Number with TPS: ZDIALCO

Consultant's Name and Billing Address:
THE ENVIRONMENTAL GROUP
4710 S. EASTERN AVE.
LOS ANGELES, CA 90040 USA

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number with TPS: ZTHEENV

Generation Site (Transport from): (name & address)
DIAL CORPORATION
9300 RAYO ST.
SOOUTH GATE, CA 90703 USA

Site Phone #: (602) 607-5190
Person to Contact: JOHN FERGUSON
FAX#:
BTEX Levels:
TPH Levels:
AVG. Levels:

Designated Facility (Transport to): (name & address)
TPS TECHNOLOGIES
12328 HIBISCUS AVE.
Adelanto, CA 92301 USA

Facility Phone #: 800-862-8001
Person to Contact: DARREN R. BARTLETT
FAX#: 619-246-8004
Facility Permit Numbers:

Transporter Name and Mailing Address:
BOB FIDLER INTERNATIONAL
249 ARDMORE ST.
SAN BERNARDINO, CA 92404 USA

Transporter's Phone #: (909) 886-3432
Person to Contact: BOB FIDLER
FAX#: (909) 881-1223
Transporter's US EPA ID No.: DALT?V
Transporter's DOT No.:
Customer Account Number with TPS: 7BOBFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			65360	26540	38820
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					19.4

List any exception to items listed above: (14553)

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Steve Dixon - as owner Agent — Generator ☐ Consultant ☑ — Signature and date: [signature] — Month 10 Day 31 Year 96

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: DAN DANDLIN — Signature and date: [signature] — Month 10 Day 31 Year 96

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: D. Bartlett/S. Clements — Signature and date: Sandy Clements 10-31-96

Please print or type.

TRANSPORTER'S COPY

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

Date of Shipment	Responsible for Payment	Transporter Truck #	Facility #:	Given by TPS:	Load #
10-31-96	Contractor		A07	07748	003

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
DIAL CORPORATION 1850 N. CENTRAL AVE. PHOENIX, AZ 85077 USA	Person to Contact: FAX#:	Customer Account Number with TPS: 7DIALCO

Consultant's Name and Billing Address:	Consultant's Phone #:	
THE ENVIRONMENTAL GROUP 4710 S. EASTERN AVE. LOS ANGELES, CA 90040 USA	Person to Contact: FAX#:	Customer Account Number with TPS: 7THEENV

Generation Site (Transport from): (name & address)	Site Phone #:	
DIAL CORPORATION 9300 RAYO ST. SOOUTH GATE, CA 90703 USA	(602) 207-5198 Person to Contact: JOHN FERGUSON FAX#: (602)	BTEX Levels TPH Levels AVG. Levels

Designated Facility (Transport to): (name & address)	Facility Phone #:	Facility Permit Numbers
TPS TECHNOLOGIES 12328 HIBISCUS AVE. Adelanto, CA 92301 USA	800-862-0001 Person to Contact: DARREN R. BARTLETT FAX#: 619-246-8004	

Transporter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
BOB FIDLER INTERNATIONAL 249 ARDMORE ST. SAN BERNARDINO, CA 92404 USA	(909) 886-2432 Person to Contact: BOB FIDLER FAX#: (909) 881-1223	Dalton Transporter's DOT No.: Customer Account Number with TPS: 7BOBFID

Description of Soil		Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Clay ☐	Organic ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐			75960	31660	44300
Sand ☐ Clay ☐	Organic ☐ Other ☐	0-10% ☐ 10-20% ☐ 20%-over ☐	Gas ☐ Diesel ☐ Other ☐					22.15

List any exceptions to items listed above:

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Steve Axon - as owner Agent | Generator ☐ Consultant ☒ | Signature and date: [signature] | Month 10 Day 31 Year 96

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Wayne Johnston | Signature and date: [signature] | Month 10 Day 31 Year 96

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: D. Bartlett/S. Clemente | Signature and date: [signature] 10-31-96

Please print or type.

TPS FACILITY COPY

R-96%

TPS Technologies Soil Recycling
Non-Hazardous Soils

Date of Shipment	Responsible for Payment	Transporter Truck #	Facility #	Given by TPS:	Load #
	Contractor	143	A07	07748	002

Generator and/or Consultant

Generator's Name and Billing Address:
DIAL CORPORATION
1850 N. CENTRAL AVE.
PHOENIX, AZ 85077 USA

Generator's Phone #:
Person to Contact:
FAX#:
Generator's US EPA ID No.
Customer Account Number with TPS: 7DIALCO

Consultant's Name and Billing Address:
THE ENVIRONMENTAL GROUP
4710 S. EASTERN AVE.
LOS ANGELES, CA 90040 USA

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number with TPS: 7THEENV

Generation Site (Transport from): (Name & address)
DIAL CORPORATION
9300 RAYO ST.
SOUTH GATE, CA 90201 USA

Site Phone #: (6021) 20[illegible] 5198
Person to Contact: JOHN FERGUSON
FAX#:
BTEX Levels
TPH Levels
AVC. Levels

Designated Facility (Transport to): (Name & address)
TPS TECHNOLOGIES
12328 HIBISCUS AVE.
Adelanto, CA 92301 USA

Facility Phone #: 800-827-8001
Person to Contact: DARREN R. BARTLETT
FAX#: 619-246-2004
Facility Permit Numbers

Transporter Name and Mailing Address:
BOB FIDLER INTERNATIONAL
249 ARDMORE ST.
SAN BERNARDINO, CA 92404 USA

Transporter's Phone #: (909) 881-2432
Person to Contact: BOB FIDLER
FAX#: (909) 881-1223
Transporter's US EPA ID No.: DAILY'D 143
Transporter's DOT No.:
Customer Account Number with TPS: 780BFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			72580	27460	45220
Sand ☐ Organic ☐ Clay ☐ Other ☐	0-10% ☐ 10-20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					22.61

List any exceptions to items listed above: (14345)

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Steve Dixon - AS Owner Agent — Generator ☐ Consultant ☐ — Signature and date: — Month 10 Day 31 Year 96

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: — Signature and date: — Month — Day — Year

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above.

Print or Type Name: D. Bartlett/S. Clements — Signature and date: [signature] 10-31-96

Please print or type.

TRANSPORTER'S COPY

Manifest

TPS Technologies Soil Recycling
Non-Hazardous Soils

Date of Shipment	Responsible for Payment	Transporter Truck #:	Facility #:	Given by TPS:	Load #
	Contractor	208	A07	07748	001

Generator and/or Consultant

Generator's Name and Billing Address:
DIAL CORPORATION
1850 N. CENTRAL AVE.
PHOENIX, AZ 85077 USA

Generator's Phone #: --
Generator's US EPA ID No.:
Person to Contact:
FAX#:
Customer Account Number with TPS: 7DIALCO

Consultant's Name and Billing Address:
THE ENVIRONMENTAL GROUP
4710 S. EASTERN AVE.
LOS ANGELES, CA 90040 USA

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number with TPS:

Generation Site (Transport from): (name & address)
DIAL CORPORATION
9300 RAYO ST.
SOUTH GATE, CA 90280 USA

Site Phone #: 562-207-5298
Person to Contact: JOHN FERGUSON
FAX#:
STEX Levels
TPH Levels
AVG. Levels

Designated Facility (Transport to): (name & address)
TPS TECHNOLOGIES
12328 HIBISCUS AVE.
Adelanto, CA 92301 USA

Facility Phone #: 800-862-3001
Person to Contact: DARREN R. BARTLETT
FAX#: 619-246-9004
Facility Permit Numbers:

Transporter Name and Mailing Address:
BOB FIDLER INTERNATIONAL
249 ARDMORE ST.
SAN BERNARDINO, CA 92404 USA

Transporter's Phone #: (909) 886-2432
Person to Contact: BOB FIDLER
FAX#: (909) 881-1223
Transporter's US EPA ID No.: CALTDA/TRK
Transporter's DOT No.:
Customer Account Number with TPS: 7BOBFID

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐			19580	04440	15140
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					26.57

List any exception to items listed above: 14371

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☒ — Steve Dixon - as owner Agent
Signature and date:
Month: 10 Day: 31 Year: 94

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: PETER AGUILE
Signature and date:
Month: 10 Day: 31 Year: 94

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

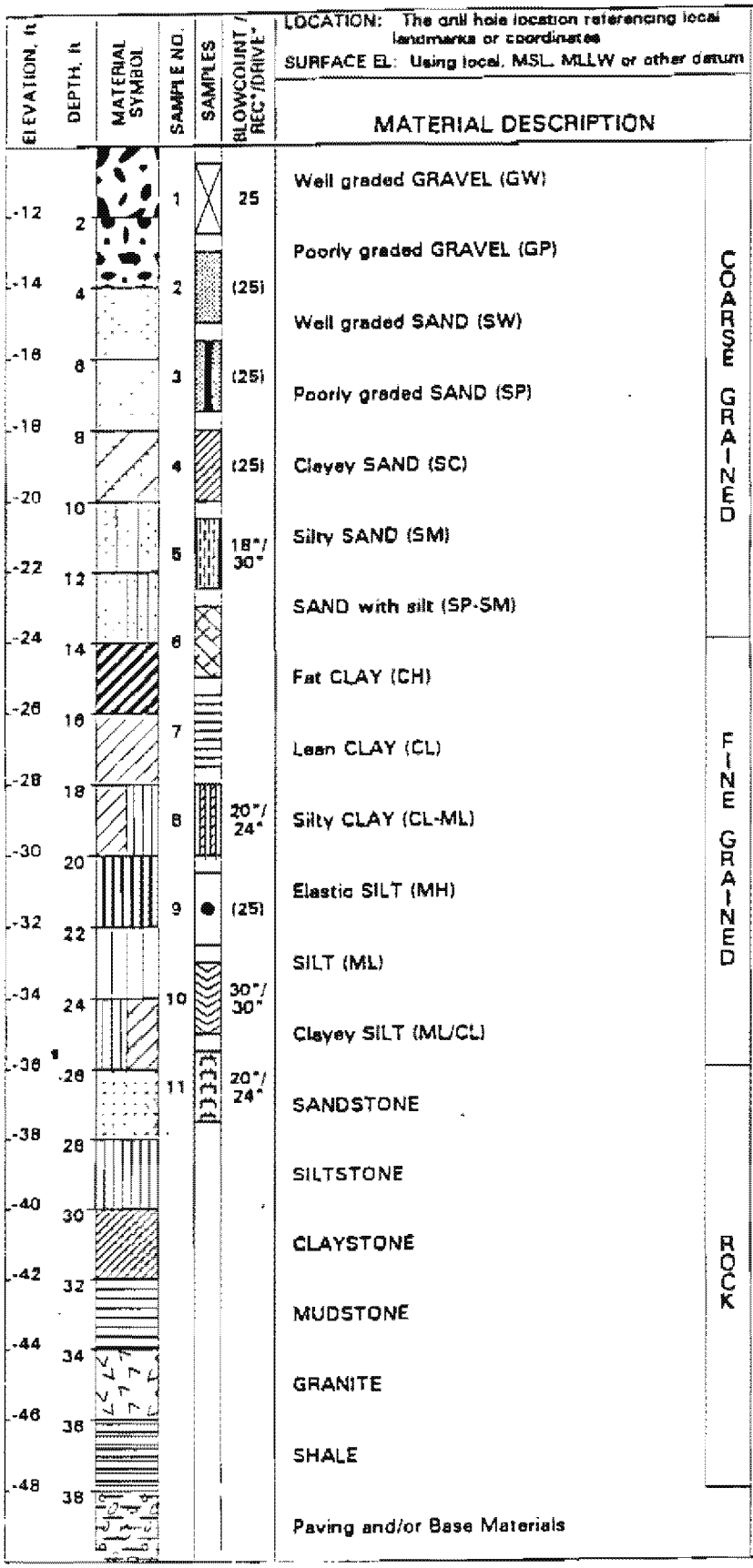
Print or Type Name: D. Bartlett/S. Clements
Signature and date: David Clement 10-31-94

Please print or type.

APPENDIX E

EXPLORATORY BORING LOGS AND WELL DETAILS

March 1997
Project No. 2277-006



General Notes

1 Soil Texture Symbol

2 Sloped line in symbol column indicates transitional boundary

3 Samplers and sampler dimensions (unless otherwise noted in report text) are as follows:

Symbol for:

1 SPT Sampler, driven 1 3/8" ID, 2" OD
2 CA Liner Sampler, driven 2 3/8" ID, 3" OD
3 CA Liner Sampler, disturbed 2 3/8" ID, 3" OD
4 Recovery Interval
5 Thin-walled Tube, pushed 2 7/8" ID, 3" OD
6 Bulk Bag Sample (from cuttings)
7 Hand Auger Sample
8 Rock Core Sample
9 No Sample Recovered
10 Vibracore Sample
11 Pitcher Sample

4 Sampler Driving Resistance

Number of blows with 140 lb. hammer, falling 30-in. to drive sampler 1-ft. after seating sampler 6-in.; for example,

Blows/ft	Description
25	25 blows drove sampler 12" after initial 6" of seating
86/11"	After driving sampler the initial 6" of seating, 36 blows drove sampler through the second 6" interval, and 50 blows drove the sampler 5" into the third interval
50/6"	50 blows drove sampler 6" after initial 6" of seating
Ref/3"	50 blows drove sampler 3" during initial 6" seating interval

5 Blow counts for California Liner Sampler shown in ( )

6 Length of sample symbol approximates recovery length

7 Classification of Soils per ASTM D2487 or D2488

8 Geologic Formation noted in bold font at the top of interpreted interval

9 Strength Legend

Q = Unconfined Compression
u = Unconsolidated Undrained Triaxial
t = Torvane
p = Pocket Penetrometer
m = Miniature Vane

10 Water Level Symbols

Initial or perched water level
Final ground water level
Seepages encountered

11 Rock Quality Designation (RQD) is the sum of recovered core pieces greater than 4 inches divided by the length of the cored interval

KEY TO TERMS AND SYMBOLS USED ON LOGS
DIAL ASSESSMENT

PLATE E-1

March 1997
Project No. 2277-006

Well Construction Diagram


Well Cap


Protective concrete cover


Aboveground cover


Concrete

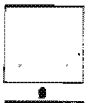

Grout/neat cement


Bentonite pellets


Sand


Slotted pipe w/bottom cap


Grout plug


Sand Backfill


Native Backfill

A. The different types of well constructed include but are not limited to monitoring, vapor extraction, and piezometer.

B. Types and sizes of the materials used are as described in report text

General Notes, continued

12 Refer to report text for EPA Test Methods used

13 Commonly used acronyms:

MSL	Mean Sea Level
MLLW	Mean Lower Low Water
EL	Elevation
FT	Foot or Feet
IN	Inch or Inches
KSF	Kips Per Square Foot
TSF	Tons Per Square Foot
PCF	Pounds Per Cubic Foot
Su	Undrained Shear Strength
MG/KG	Milligrams Per Kilograms
UG/KG	Micrograms Per Kilograms
PPM	Parts Per Million
ND	Not Detected
D	Detected
NA	Not Analyzed
--	Not Analyzed
PID	Photoionization Detector
MTBE	Methyl Tertiary Butyl Ether
TPH	Total Petroleum Hydrocarbons
PCE	Tetrachloroethylene
TCE	Trichloroethene
EDC	1,2-Dichloroethane
cis-1,2-DCE	cis-1,2-dichloroethene
SVOC	Semi-Volatile Organic Compounds

14 PID READING measured in parts per million by volume (ppmv)

15 Kelly Bar Weights used with bucket auger drill rig.

0 - 30 ft	3450 lbs
30 - 60 ft	2050 lbs
60 - 90 ft	1140 lbs

KEY TO TERMS AND SYMBOLS USED ON LOGS
DIAL ASSESSMENT

PLATE E-2

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (af)** Silty fine SAND with gravel (SM): loose,. brown to light brown, with concrete debris, moist, soapy odor with no visible stainning								
106	4												
104	6		1-5		**Alluvium (Qal)** Silty fine SAND (SM): dense, brown to dark brown, moist, no odor or stainning	7.8	1700	ND	—	ND	ND	ND	ND
102	8												
100	10		1-10			10.5	39	ND	—	ND	ND	ND	ND
98	12												
96	14				Medium SAND (SP): very dense, brown to light greenish brown, moist, soapy odor with no visible stainning								
94	16		1-15			6.8	171	ND	—	ND	ND	ND	ND
92	18												
90	20				Fine sandy SILT (ML),stiff, brown to dark brown, moist, soapy odor with no visible stainning								
88	22		1-20			11.6	ND	ND	—	ND	ND	ND	ND
86	24												
84	26		1-25			27.3	20	ND	—	ND	ND	ND	ND
82	28												
80	30		1-30										
78	32					24.7	ND	ND	—	ND	ND	ND	ND
76	34				Fine SAND (SM): loose, light brown to tan to yellowish brown, moist, soapy odor with no visible stainning								
74	36		1-35			25.3	ND	ND	—	ND	ND	ND	ND
72	38												
70	40		1-40			18.3	ND	ND	—	ND	ND	ND	ND
68	42				Silty fine SAND (SM): loose, dark brown, very moist, slight soapy odor with no visible stainning								
66	44												
64	46		1-45			15.2	ND	ND	—	ND	ND	ND	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER:
first Encountered (▽)
At End of Drilling (▼)
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 13, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-1
Dial Assesment

PLATE E-3

March 1997
Project No. 2277-006

LOCATION: Alkyate loading sump area

SURFACE EL: Not Surveyed.

ELEVATION, ft / DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	MATERIAL DESCRIPTIONS	PID READING (PPMV)	TOTAL ORGANIC CARBON, mg/kg	UNIT DRY WEIGHT, pcf	WATER CONTENT %	POROSITY, %	PERMEABILITY, cm/sec
2				**ARTIFICIAL FILL (af)** SAND (SP): brown to dark brown, moist, with gravel (concrete debris), wood fragments, no odor						
4										
6		EB2-5			0					
8				**Alluvium (Qal)** Silty SAND (SM): loose, brown to dark brown, very moist, no odor, dark brown staining						
10		EB2-10			5.7					1.16E-06
12										
14				Sandy CLAY (CL): very stiff, dark brown to brown, very moist, no odor or staining						
16		EB2-15			0					
18										
20		EB2-20		Silty fine SAND (SM): dark brown to brown, very moist, no odor no staining	0	0.31	90	31	47	
22				Sandy CLAY (CL): very stiff, light brown to brown, no odor no staining						
24					1.2	.0.33	86	35	49	1.79E-07
26		EB2-25		Silty fine SAND (SM): dense, dark brown to brown, very moist, no odor or staining						
28										
30		EB2-30		Sandy CLAY (CL): stiff, light brown to brown, very moist, no odor or staining	1.3					
32				Silty, fine SAND (SM): dense, brown to light brown, very moist, no odor or staining						
34					1.0		90	23	46	
36		EB2-35								
38				▽ wet below 39'						
40		EB2-40			1.5					
42										
44										
46										
48										

COMPLETION DEPTH: 41.5 ft.
DEPTH TO WATER:
First Encountered (▽): 39.0 ft.
At End of Drilling (▼):
BACKFILLED WITH: Bentonite/Native
DRILLING DATE: September 20, 1996

DRILLIG METHOD: Hollow Stem Auger
DRILLED BY: Valliey Well Drilling
LOGGED BY: JRCook
CHECKED BY: MFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILLHOLE NO. EB-2
Dial Assesment

PLATE E-4

March 1997
Project No. 2277-006

LOCATION: Alkyate loading sump area

SURFACE EL: Not Surveyed.

ELEVATION, ft / DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	MATERIAL DESCRIPTIONS	PID READING (PPMV)	TOTAL ORGANIC CARBON, mg/kg	UNIT DRY WEIGHT, pcf	WATER CONTENT %	POROSITY, %	PERMEABILITY, cm/sec
2				**ARTIFICIAL FILL (af)** SAND (SP): brown to dark brown, moist, with gravel (concrete debris), wood fragments, no odor						
4										
6		EB2 -5			14.8					
8				**Alluvium (Qal)** Silty SAND (SM): loose, brown to dark brown, very moist, no odor, dark brown staining						
10		EB2 -10			1.2					
12										
14										
16		EB2 -15			4.6	0.34				
18										
20		EB2 -20			3.1		93	28	45	
22										
24				Sandy CLAY (CL): stiff, brown to light brown, very moist, no odor no staining						
26		EB2 -25			3.7		87	34	49	1.87E-07
28										
30		EB3 -30			5.9					
32				Silty, fine SAND (SM): dense, brown to light brown, very moist, no odor or staining						
34										
36		EB3 -35		▼	5.8	0.25				
38										
40		EB3 -40			5.7					
42										
44										
46										
48										

COMPLETION DEPTH: 41.5 ft.
DEPTH TO WATER:
First Encountered (▽): 37.0 ft.
At End of Drilling (▼): 37.0 ft.
BACKFILLED WITH: Bentonite/Native
DRILLING DATE: September 20, 1996

DRILLIG METHOD: Hollow Stem Auger
DRILLED BY: Vallley Well Drilling
LOGGED BY: JRCook
CHECKED BY: MFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF DRILLHOLE NO. EB-3
Dial Assesment

PLATE E-5

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE mg/kg	Chloroform, mg/kg
109	1				**ALLUVIUM (Qal)** Silty CLAY (CL): medium stiff, darkl brown, moist								
108	2												
107	3												
106	4												
105	5					0	ND						
104	6												
103	8												
102	9												
101	10					0	ND						
100	11				Silty SAND (ML),medium dense, modertate brown, moist, fine to medium grained								
99	12												
98	13												
97	14												
96	15					0	ND						
95	16				CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	ND						
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 6, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-4
Dial Assesment

PLATE E-6

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**Artificial Fill (af)** Sandy GRAVEL (GP): medium dense, Pale yellowish, orange, moist, fine to coarse grained sand matrix with gravel to 1-inch diameter								
108	2												
107	3				**Alluvium (Qal)** Silty SAND (SM): medium dense, modertate brown, moist, fine to medium grained								
106	4												
105	5					0	ND	—	—	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	ND	—	—	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15												
95	16												
94	17												
93	18												
92	19												
91	20												
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 11.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-5
Dial Assesment

PLATE E-7

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ARTIFICIAL FILL (af)** Gravely SAND (SP): medium dense, Pale yellowish, orange, moist, fine to coarse grained sand matrix with gravel to 1-inch diameter								
108	2												
107	3				**ALLUVIUM (Qal)** Silty SAND (SM): medium dense, moderate brown, moist, fine to medium grained								
106	4												
105	5					0	ND	—	—	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	ND	—	—	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15												
95	16												
94	17												
93	18												
92	19												
91	20												
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 11.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-6
Dial Assesment

PLATE E-8

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ARTIFICIAL FILL (af)** Gravely SAND (SP): medium dense, Pale yellowish, orange, moist, fine to coarse grained sand matrix with gravel to 1-inch diameter								
108	2												
107	3				**ALLUVIUM (Qal)** Silty SAND (SM): medium dense, modertate brown, moist, fine to medium grained								
106	4												
105	5					0	580	–	–	–	–	–	–
104	6												
103	8												
102	9												
101	10					0	ND	–	–	–	–	–	–
100	11												
99	12												
98	13												
97	14												
96	15												
95	16												
94	17												
93	18												
92	19												
91	20												
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 11.5 ft.
DEPTH TO WATER:
first Encountered (▽).
At End of Drilling (▼).
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-7
Dial Assesment

PLATE E-9

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**Alluvium (Qal)** Silty CLAY (CL): stiff, moderate brown, damp, fine grained								
106	4												
104	6					0	—	ND	—	ND	ND	ND	0.01
102	8												
100	10					0	—	ND	—	ND	ND	ND	0.076
98	12												
96	14												
94	16				Silty SAND (SP): medium dense, moderate brown, moist, fine to medium grained	0	—	ND	—	ND	ND	ND	0.5
92	18												
90	20				Clay (CL): meduim stiff, moderate brown, moist,	0	—	ND	—	ND	ND	0.022	0.024
88	22												
86	24												
84	26				Silty SAND (SP): medium dense, moderate brown, moist, fine to medium grained	0	—	ND	—	ND	ND	0.0076	ND
82	28												
80	30					0	—	ND	—	ND	ND	0.05	ND
78	32												
76	34												
74	36				SAND (SP): medium dense, moderate brown, moist, medium grained	0	—	ND	—	ND	ND	ND	ND
72	38												
70	40				Sandy CLAY (CL): stiff, dark brown, moist, fine to medium grained	0	—	ND	—	ND	ND	0.0031	ND
68	42												
66	44												
64	46					0	—	ND	—	ND	ND	ND	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 6, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-8
Dial Assesment

PLATE E-10

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**Artificial Fill (af)** SAND with gravel (SP): Pale yellow orange, dry medium dense, fine to coarse grain with gravel to 1-inch diamter concrete rubble								
106	4												
104	6		EB9-5		**Alluvium (Qal)** Silty CLAY (CL): Moderate brown, moist, medium stiff, fine grain	0	—	ND	—	ND	ND	ND	0.17
102	8												
100	10		EB9-10			0	—	ND	—	ND	ND	ND	0.64
98	12												
96	14												
94	16		EB9-15		Silty SAND (SM): Moderate brown, moist, medium dense, fine to medium grain	0	—	ND	—	ND	ND	ND	0.29
92	18												
90	20		EB9-20		Silty CLAY (CL): moderate brown, moist fine grain, plastic	0	—	ND	—	ND	ND	ND	0.46
88	22												
86	24												
84	26		EB9-25			0	—	ND	—	ND	ND	ND	0.2
82	28												
80	30		EB9-30		SAND (SP): pale gray, moist, medium density, medium gray	0	—	ND	—	ND	ND	ND	—
78	32												
76	34												
74	36		EB9-35			0	—	ND	—	ND	ND	ND	—
72	38												
70	40		EB9-40		Silty SAND (SM): moderate brown, wet, loose fine to medium grain	0	—	ND	—	ND	ND	ND	—
68	42												
66	44												
64	46		EB9-45			0	—	0.012	—	ND	ND	ND	—
62	48												
60	50												
59	52												

COMPLETION DEPTH: 45.0 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 24, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-9
Dial Assesment

PLATE E-11

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (AF)** Graverly SAND (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel to 1-inch diameter, concrete rubble								
106	4												
104	6				**Alluvium (Qal)** Silty SAND (SP): medium dense, moderate brown, fine grained	0	—	ND	—	ND	ND	ND	0.1
102	8												
100	10					0	—	ND	—	ND	ND	ND	0.15
98	12												
96	14												
94	16				Clay (CL): meduim stiff, dark brown, moist, plastic	0	—	ND	—	ND	ND	ND	0.099
92	18												
90	20					0	—	ND	—	ND	ND	ND	0.022
88	22												
86	24												
84	26				Silty SAND (SP): medium dense, dark brown, moist, fine to medium grained	0	—	ND	—	ND	ND	ND	ND
82	28												
80	30				Silty CLAY (CL): medium stiff, dark brown,moist	0	—	ND	—	ND	ND	ND	ND
78	32												
76	34												
74	36				SNAD (SP): medium dense, medium brown, moist, medium grained	0	—	ND	—	ND	ND	ND	ND
72	38												
70	40				Silty CLAY (CL): medium stiff, dark brown,moist	0	—	ND	—	ND	ND	ND	ND
68	42												
66	44												
64	46					0	—	0.031	—	ND	ND	0.0032	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 41.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 24, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-10
Dial Assesment

PLATE E-12

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL:110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (AF)** Graverly SAND (SP): medium dense, pale yellowish orange, dry, fine to medium grained with gravel to 1-inch diameter, some concrete rubble								
106	4												
104	6				**Alluvium (Qal)** Silty CLAY (CL): medium stiff, moderate brown, damp, fine grained	0	—	ND	—	ND	ND	ND	ND
102	8												
100	10					0	—	ND	—	ND	ND	ND	0.062
98	12												
96	14												
94	16				Silty SAND (SP): medium dense, moderate brown, moist, fine to medium grained	0	—	ND	—	ND	ND	ND	0.006
92	18												
90	20					0	—	ND	—	ND	ND	ND	0.091
88	22												
86	24												
84	26				Silty Clay (CL): meduim stiff, moderate brown, moist.	0	—	ND	—	ND	ND	ND	0.026
82	28												
80	30					0	—	ND	—	ND	ND	ND	ND
78	32												
76	34												
74	36				SAND (SP): medium dense, moderate brown, moist, medium grained	0	—	ND	—	ND	ND	ND	ND
72	38												
70	40					0	—	ND	—	ND	ND	ND	ND
68	42												
66	44												
64	46				Silty SAND (SP): medium dense, moderate brown, moist, fine to medium grained	0	—	ND	—	ND	ND	ND	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 24, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-11
Dial Assesment

PLATE E-13

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1 DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (AF)** Gravely SAND (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel 1-inch diameter								
106	4												
104	6				**ALLUVIUM (Qal)** Silty SAND (SP): medium dense, moderate brown, damp, fine to medium grained	0	880	—	—	—	—	—	—
102	8												
100	10					0	1400	—	—	—	—	—	—
98	12												
96	14				wet at 15 ft. with black staining								
94	16					0	15						
92	18												
90	20				fine grained below 20 ft.								
88	22					0	660	—	—	—	—	—	—
86	24												
84	26				Silty CLAY (CL): medium stiff, moderate brown, moist, fine grained	0	112	—	—	—	—	—	—
82	28												
80	30				CLAY (CL): medium soft, dark bluish gray, moist, plastic, trace odor	0	38	—	—	—	—	—	—
78	32												
76	34												
74	36				Silty SAND: (SM): medium dense, moderate brown, moist, fine to medium grained	0	ND	—	—	—	—	—	—
72	38												
70	40												
68	42					0	ND	—	—	—	—	—	—
66	44												
64	46												
62	48												
60	50												
59	52												

COMPLETION DEPTH: 41.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-13
Dial Assesment

PLATE E-15

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March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (AF)** Gravely SAND (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel 1-inch diameter								
106	4												
104	6				**ALLUVIUM (Qal)** Silty SAND (SP): medium dense, moderate brown, damp, fine to medium grained	0	880	—	—	—	—	—	—
102	8												
100	10												
98	12					0	1400	—	—	—	—	—	—
96	14				wet at 15 ft. with black staining								
94	16					0	15						
92	18												
90	20				fine grained below 20 ft.								
88	22					0	660	—	—	—	—	—	—
86	24												
84	26				Silty CLAY (CL): medium stiff, moderate brown, moist, fine grained	0	112	—	—	—	—	—	—
82	28												
80	30				CLAY (CL): medium soft, dark bluish gray, moist, plastic, trace odor	0	38	—	—	—	—	—	—
78	32												
76	34												
74	36				Silty SAND: (SM): medium dense, moderate brown, moist, fine to medium grained	0	ND	—	—	—	—	—	—
72	38												
70	40												
68	42					0	ND	—	—	—	—	—	—
66	44												
64	46												
62	48												
60	50												
59	52												

COMPLETION DEPTH: 41.5 ft.
DEPTH TO WATER:
first Encountered (¥):
At End of Drilling (¥):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-12
Dial Assesment

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ALLUVIUM (Qal)** Silty SAND (SM): medium stiff, moderate brown, moist fine to medium grained								
108	2												
107	3												
106	4												
105	5					0	—	—	4.8	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	—	—	23.6	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15					0	—	—	ND	—	—	—	—
95	16				CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	—	—	6.7	—	—	—	—
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (⊻):
At End of Drilling (⧗):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 7, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Suburface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-14
Dial Assesment

PLATE E-16

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ALLUVIUM (Qal)** Silty CLAY (CL): medium stiff, darkl brown, moist								
108	2												
107	3												
106	4												
105	5					0	—	—	Tr<3	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	—	—	14.3	—	—	—	—
100	11				Silty SAND (ML),medium dense, moderate brown, moist, fine to medium grained								
99	12												
98	13												
97	14												
96	15					0	—	—	Tr<3	—	—	—	—
95	16				CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	—	—	ND	—	—	—	—
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 6, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-15
Dial Assesment

PLATE E-17

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ARTIFICIAL FILL (AF)** Gravely Sand (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel 1-inch diameter								
108	2												
107	3				**ALLUVIUM (Qal)** Silty SAND (SM): medium stiff, moderate brown, moist, fine to medium grained								
106	4												
105	5					0	—	—	10.1	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	—	—	ND	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15					0	—	—	ND	—	—	—	—
95	16				Silty CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	—	—	3	—	—	—	—
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-16
Dial Assesment

PLATE E-18

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ARTIFICIAL FILL (AF)** Gravely Sand (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel 1-inch diameter								
108	2				**ALLUVIUM (Qal)** Silty SAND (SM): medium stiff, moderate brown, moist, fine to medium grained								
107	3												
106	4												
105	5					0	—	—	ND	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	—	—	ND	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15					0	—	—	12.3	—	—	—	—
95	16				Silty CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	—	—	2.6	—	—	—	—
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 25, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-17
Dial Assesment

PLATE E-19

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
109	1				**ARTIFICIAL FILL (AF)** Gravely Sand (SP): medium dense, pale yellowish orange, dry, fine to coarse grained with gravel 1-inch diameter								
108	2												
107	3				**ALLUVIUM (Qal)** Silty SAND (SM): medium stiff, moderate brown, moist, fine to medium grained								
106	4												
105	5					0	—	—	6.1	—	—	—	—
104	6												
103	8												
102	9												
101	10					0	—	—	5.5	—	—	—	—
100	11												
99	12												
98	13												
97	14												
96	15					0	—	—	7.6	—	—	—	—
95	16				Silty CLAY (CL): stiff, dark brown, moist, fine grained, plastic								
94	17												
93	18												
92	19												
91	20					0	—	—	3.7	—	—	—	—
90	21												
89	22												
88	23												
87	24												
86	25												
85	26												
84	27												

COMPLETION DEPTH: 21.5 ft.
DEPTH TO WATER:
first Encountered (☒):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 24, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. EB-18
Dial Assesment

PLATE E-20

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March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (af)** Fine SAND with gravel (SM): loose,, brown to light brown, with concrete debris, moist, no odors or visible stainning								
106	4												
104	6		1-5		**Alluvium (Qal)** Silty fine SAND (SM): dense, brown to dark brown, moist, no odor or stainning	17	ND	ND	—	ND	ND	ND	ND
102	8												
100	10		1-10			15.6	ND	ND	—	ND	ND	ND	ND
98	12												
96	14												
94	16		1-15			12.7	ND	ND	—	ND	ND	ND	ND
92	18												
90	20		1-20			36.2	ND	ND	—	ND	ND	ND	ND
88	22												
86	24				Fine SAND (SP): loose, brown to light brown, very moist, no odors or visible stainning								
84	26		1-25		Silty fine SAND (SM): loose, dark brown, very moist, no odors or visible stainning	27.5	ND	ND	—	ND	ND	ND	ND
82	28												
80	30		1-30			21.4	ND	ND	—	ND	ND	ND	ND
78	32												
76	34				CLAY (CL): stiff, light brown to olive brown, very moist, no odors or visible stainning								
74	36		1-35			17.7	ND	ND	—	ND	ND	ND	ND
72	38												
70	40		1-40			19.9	ND	0.0078	—	ND	ND	ND	ND
68	42												
66	44												
64	46		1-45		Fine sndy CLAY (CL): stiff, brown to dark brown, very moist, no odors or visible stainning	17.5	ND	0.08	—	ND	ND	ND	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼)
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 13, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Suburface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. CB-1
Dial Assesment

PLATE E-21

March 1997
Project No. 2277-006

ELEVATION, ft	DEPTH, ft	MATERIAL SYMBOL	SAMPLE NO.	SAMPLES	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2				**ARTIFICIAL FILL (af)** Fine SAND with gravel (SM): loose,, brown to light brown, with concrete debris, moist, no odors or visible stainning								
106	4												
104	6		2-5		**Alluvium (Qal)** Fine SAND (SM): loose, yellowish brown to light brown, moist, no odor or stainning	15.2	0.56	ND	—	ND	ND	ND	ND
102	8												
100	10		2-10		Fine silty SAND (SM): loose, brown to dark brown, moist, no odor or stains	15.6	ND	ND	—	ND	ND	ND	ND
98	12												
96	14												
94	16		2-15			14.2	0.82	ND	—	ND	ND	ND	ND
92	18				Fine clayey SAND (SC): dense, brown to dark brown, moist, no odor or stains								
90	20		2-20			20.1	6.7	ND	—	ND	ND	ND	ND
88	22				Fine SAND (SP): loose, brown to light brown, very moist, no odors or visible stainning								
86	24												
84	26		2-25			16.8	2	ND	—	ND	ND	ND	ND
82	28				Fine silty SAND (SM): loose, brown to dark brown, very moist, no odor or stains								
80	30		2-30			16.2	1.5	0.13	—	ND	ND	ND	ND
78	32												
76	34				Fine Clayey SAND (SC): stiff, brown to dark brown, very moist, no odor or stains								
74	36		2-35			13.4	ND	ND	—	ND	ND	ND	ND
72	38												
70	40		2-40		Fine SAND (SP): loose, yellowish brown to light brown, very moist, no odors or visible stainning	14.6	ND	0.0063	—	ND	ND	ND	ND
68	42												
66	44												
64	46		2-45		Fine sndy CLAY (CL): stiff, brown to dark brown, very moist, no odors or visible stainning	12.6	0.74	0.021	—	ND	ND	ND	ND
62	48												
60	50												
59	52												

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER:
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 13, 1997

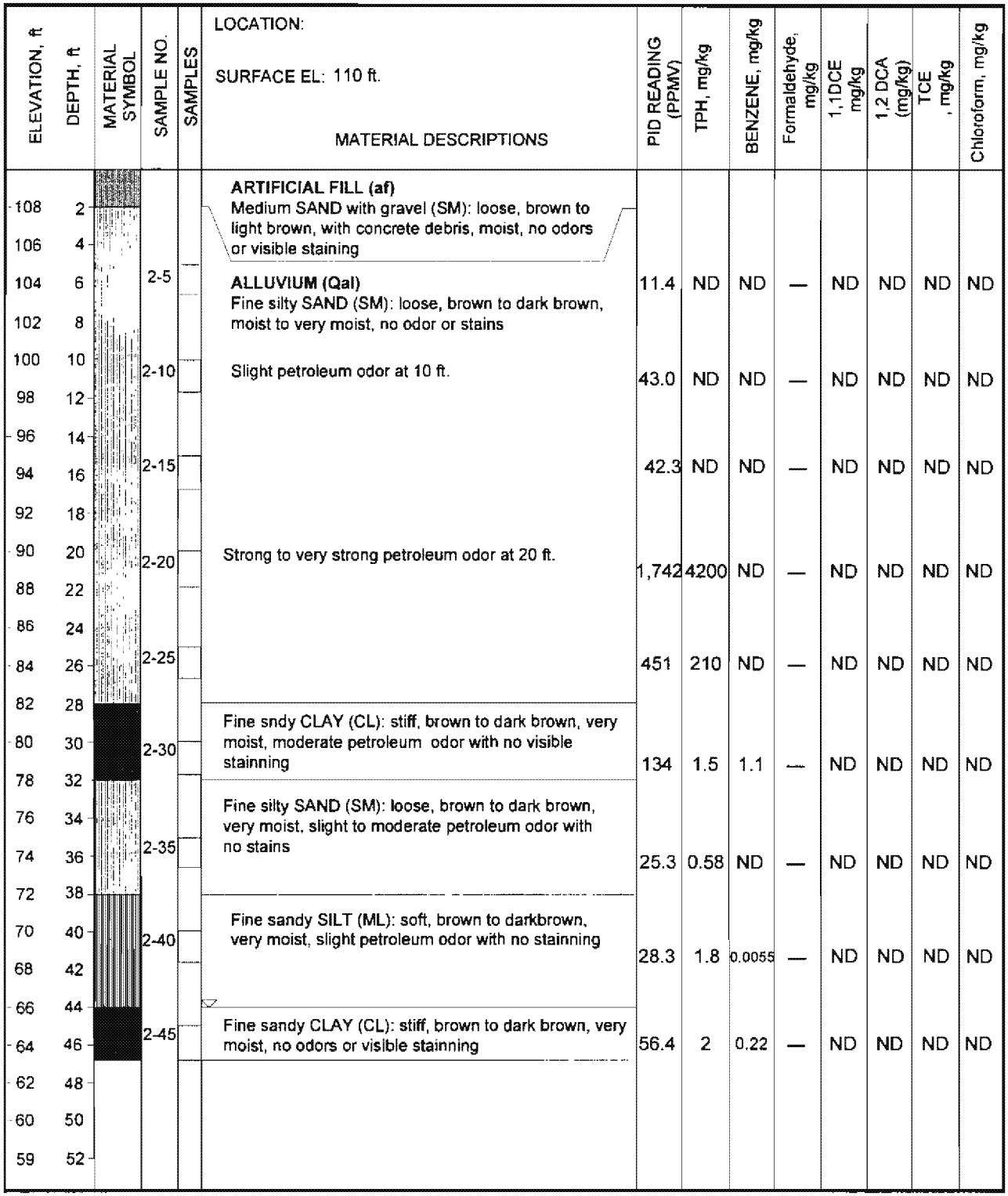
DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. CB-2
Dial Assesment

PLATE E-22

March 1997
Project No. 2277-006



ELEVATION, ft	DEPTH, ft	SAMPLE NO.	LOCATION: SURFACE EL: 110 ft. MATERIAL DESCRIPTIONS	PID READING (PPMV)	TPH, mg/kg	BENZENE, mg/kg	Formaldehyde, mg/kg	1,1DCE mg/kg	1,2 DCA (mg/kg)	TCE , mg/kg	Chloroform, mg/kg
108	2		**ARTIFICIAL FILL (af)** Medium SAND with gravel (SM): loose, brown to light brown, with concrete debris, moist, no odors or visible staining								
106	4										
104	6	2-5	**ALLUVIUM (Qal)** Fine silty SAND (SM): loose, brown to dark brown, moist to very moist, no odor or stains	11.4	ND	ND	—	ND	ND	ND	ND
102	8										
100	10	2-10	Slight petroleum odor at 10 ft.	43.0	ND	ND	—	ND	ND	ND	ND
98	12										
96	14	2-15		42.3	ND	ND	—	ND	ND	ND	ND
94	16										
92	18										
90	20	2-20	Strong to very strong petroleum odor at 20 ft.	1,742	4200	ND	—	ND	ND	ND	ND
88	22										
86	24										
84	26	2-25		451	210	ND	—	ND	ND	ND	ND
82	28										
80	30	2-30	Fine sndy CLAY (CL): stiff, brown to dark brown, very moist, moderate petroleum odor with no visible stainning	134	1.5	1.1	—	ND	ND	ND	ND
78	32										
76	34		Fine silty SAND (SM): loose, brown to dark brown, very moist, slight to moderate petroleum odor with no stains								
74	36	2-35		25.3	0.58	ND	—	ND	ND	ND	ND
72	38										
70	40		Fine sandy SILT (ML): soft, brown to darkbrown, very moist, slight petroleum odor with no stainning								
68	42	2-40		28.3	1.8	0.0055	—	ND	ND	ND	ND
66	44										
64	46	2-45	Fine sandy CLAY (CL): stiff, brown to dark brown, very moist, no odors or visible stainning	56.4	2	0.22	—	ND	ND	ND	ND
62	48										
60	50										
59	52										

COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER: 44 ft.
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: Bentonite Chips
DRILLING DATE: February 13, 1997

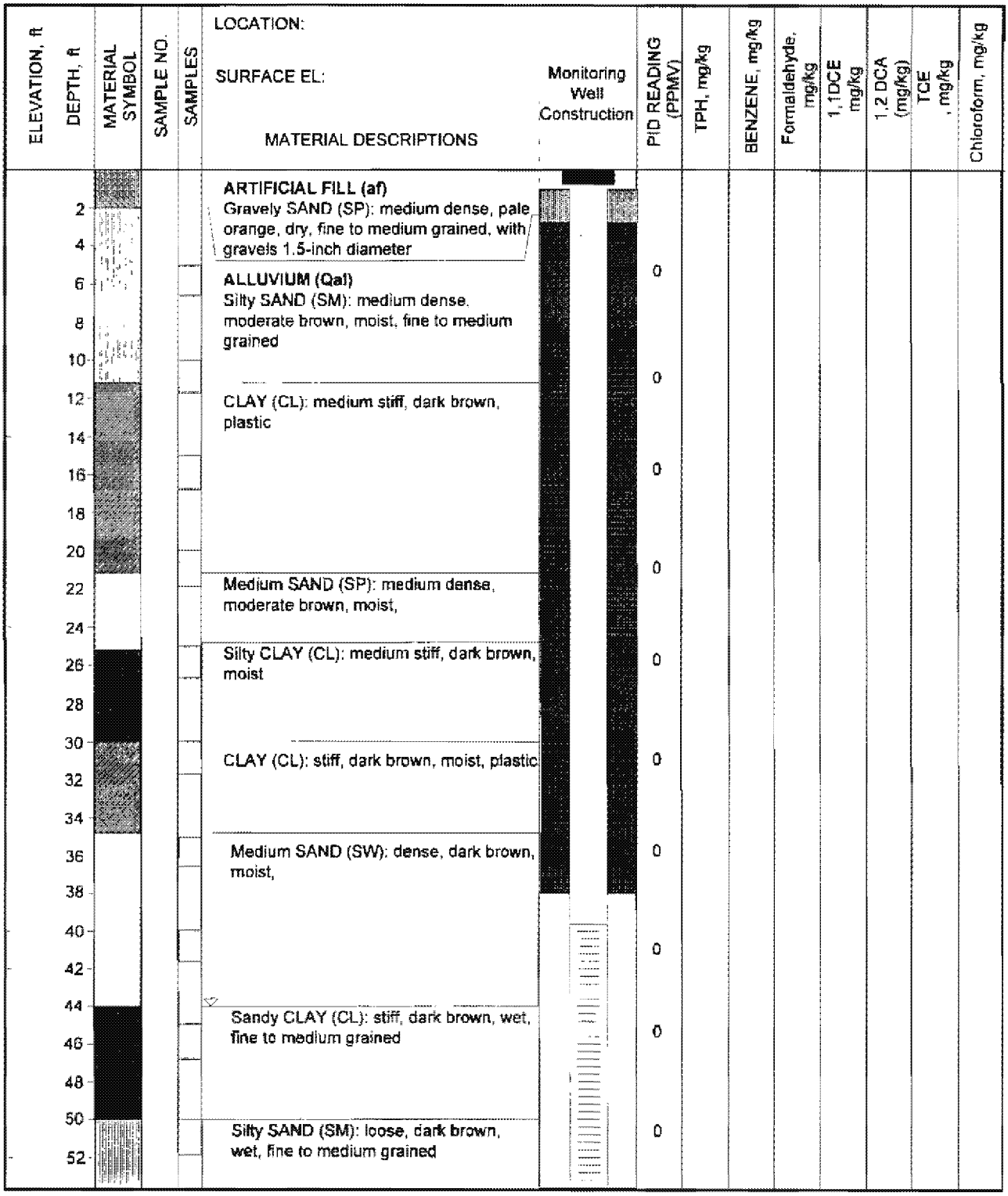
DRILLIG METHOD: Geoprobe
DRILLED BY: Vironex
LOGGED BY: JRCook
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. CB-3
Dial Assesment

PLATE E-23

March 1997
Project No. 2277-006



COMPLETION DEPTH: 70.0 ft.
DEPTH TO WATER: 44 ft.
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: 4.0-inch Diameter PVC
DRILLING DATE: February 12, 1997

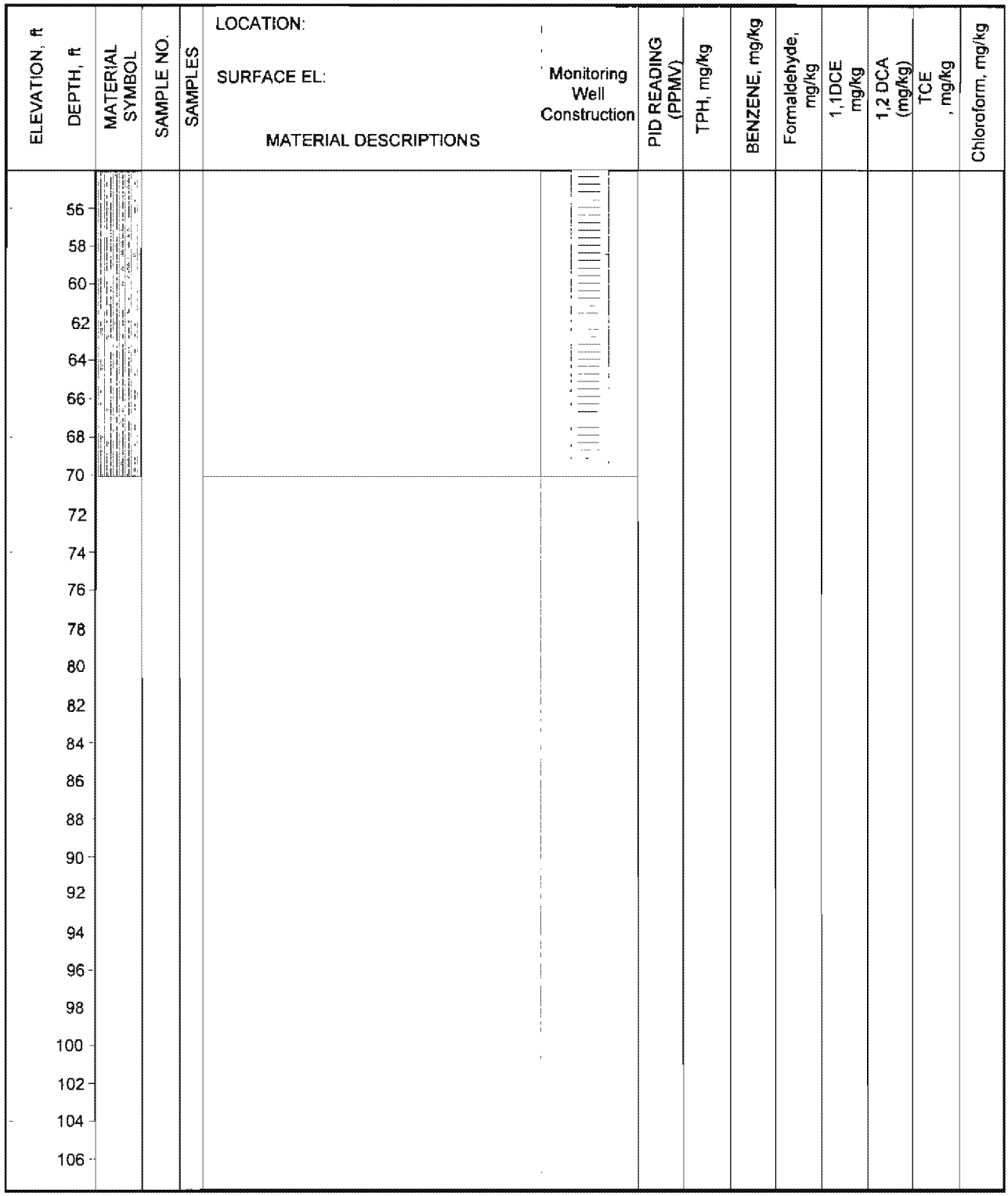
DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-11
Dial Assesment

PLATE E-24

March 1997
Project No. 2277-006



COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER: 44 ft.
first Encountered (⌭):
At End of Drilling (⌛):
BACKFILLED WITH: 4.0-inch diameter PVC Well
DRILLING DATE: February 13, 1997

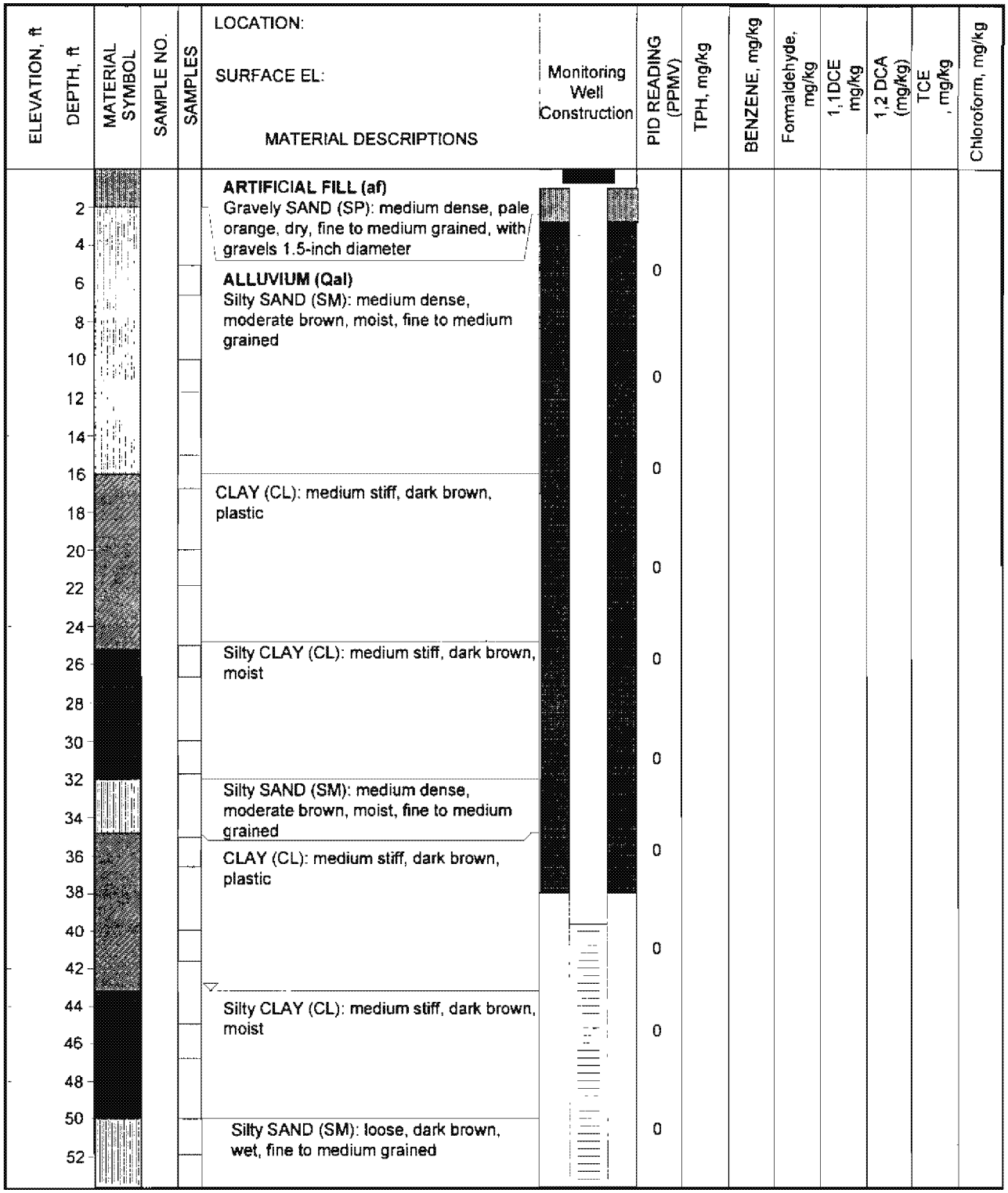
DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-11
Dial Assesment

PLATE E-24

March 1997
Project No. 2277-006



COMPLETION DEPTH: 70.0 ft.
DEPTH TO WATER: 44 ft.
first Encountered (▽).
At End of Drilling (▼):
BACKFILLED WITH: 4.0-inch Diameter PVC
DRILLING DATE: February 12, 1997

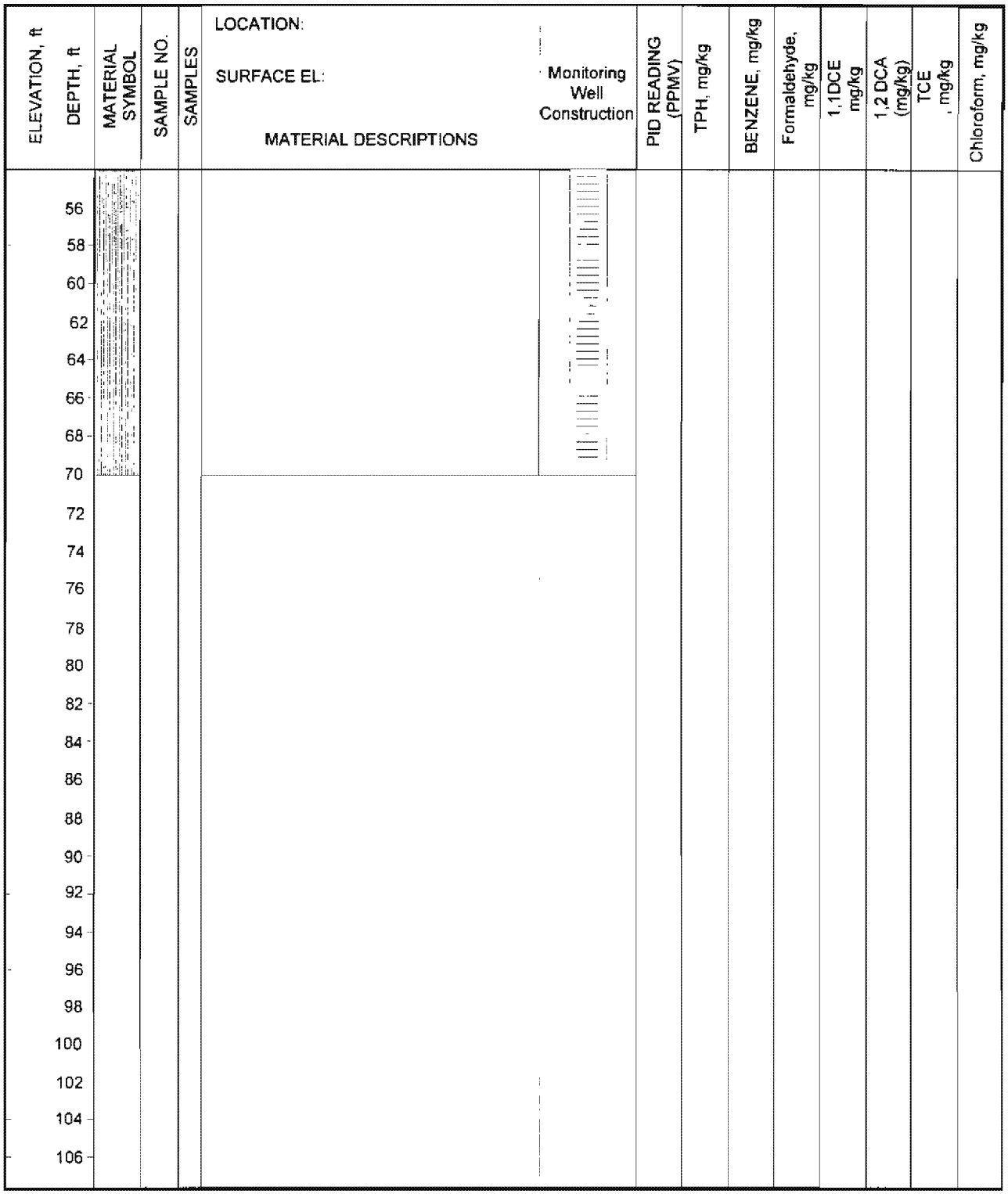
DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-12
Dial Assesment

PLATE E-25

March 1997
Project No. 2277-006



COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER: 44 ft.
first Encountered (⩒):
At End of Drilling (▼):
BACKFILLED WITH: 4.0-inch diameter PVC Well
DRILLING DATE: February 12, 1997

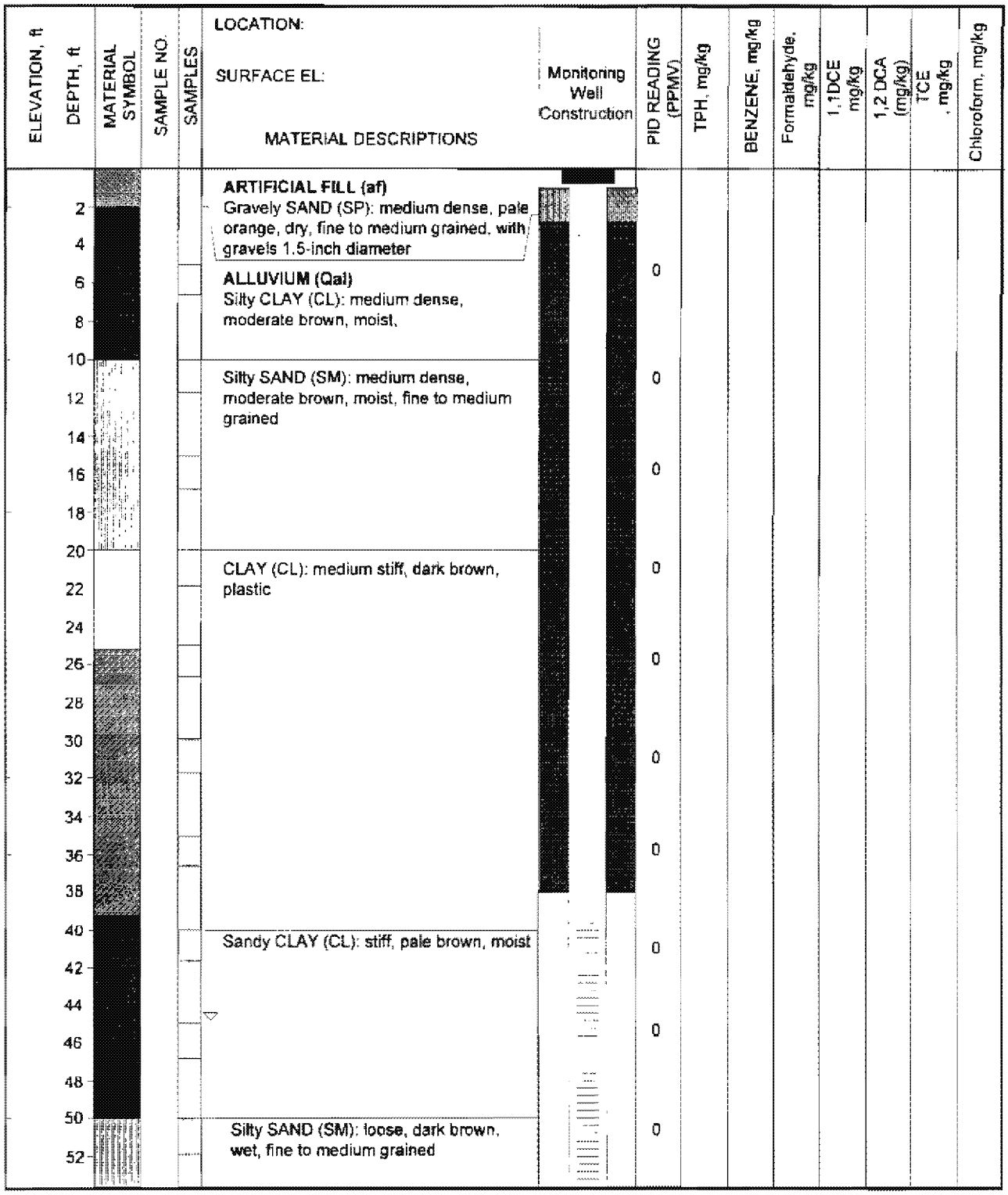
DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-12
Dial Assesment

PLATE E-25

March 1997
Project No. 2277-006



COMPLETION DEPTH: 70.0 ft.
DEPTH TO WATER: 44 ft.
first Encountered (▽):
At End of Drilling (▼):
BACKFILLED WITH: 4.0-inch Diameter PVC
DRILLING DATE: February 13, 1997

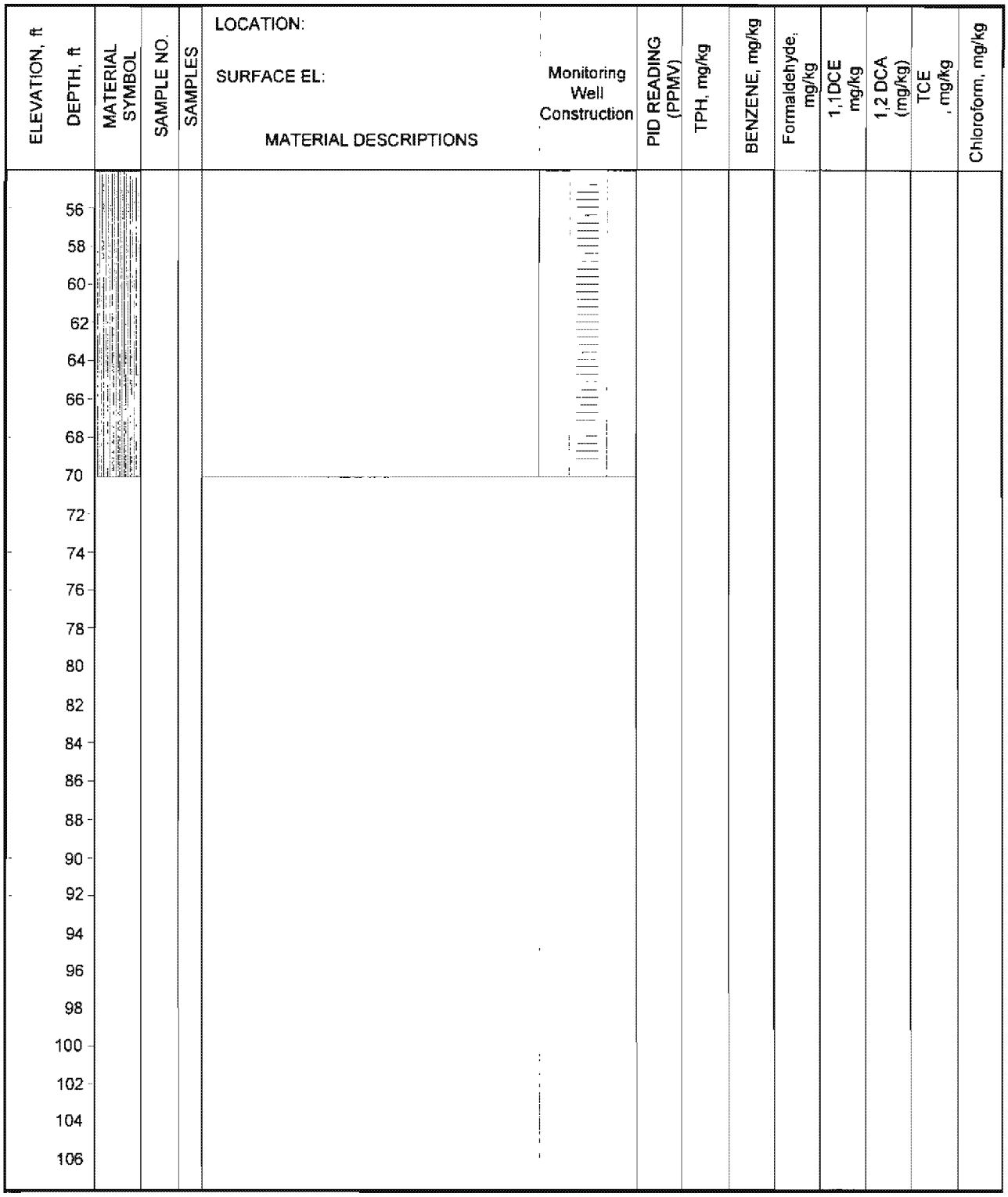
DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Subsurface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-13
Dial Assesment

PLATE E-26

March 1997
Project No. 2277-006



COMPLETION DEPTH: 46.5 ft.
DEPTH TO WATER: 44 ft.
first Encountered (∠):
At End of Drilling (▼):
BACKFILLED WITH: 4.0-inch diameter PVC Well
DRILLING DATE: February 13, 1997

DRILLIG METHOD: Geoprobe
DRILLED BY: Valley Well
LOGGED BY: LLawhon
CHECKED BY: MEFlack

The log and data presented are a simplification of actual condition encountered at the time of probing at the probed location. Suburface conditions may differ at other locations and with the passage of time.

LOG OF SOIL DRILLHOLE NO. MW-13
Dial Assesment

PLATE E-26

APPENDIX F

SCREENING LEVEL ESTIMATES AND CALCULATIONS

APPENDIX F
SOIL CLEANUP LEVEL ESTIMATES

Table 4-1 - Maximum Screening Levels (mg/kg) for TPH and BTEX Above Drinking Water Aquifers, and Table 5-1 - Average Attenuation Factors for Different Distances Above Ground Water and Lithology, and the methods described in Appendix A - Attenuation Factor Methods for VOCs in the RWQCB May 1996 document, were used to establish the screening levels for the COCs. The screening level estimates were calculated using a depth to ground water of 45 feet bgs. In calculating the attenuation factor, the soil makeup separating the COCs and the groundwater was interpreted to be 50 percent sand and 50 percent clay. Boring logs for exploratory soil borings drilled in support of the risk assessment were used, along with logs from previous assessment programs (see Appendix E). Linear interpolation of the published criteria on Table 4-1 and 5-1 were used to establish an attenuation factor for each 5-foot-separation to groundwater, and establish the screening level estimates for the petroleum hydrocarbons. Screening level estimates were provided for those VOCs or other COCs that were reported by the laboratory in the soil samples collected during the closure and post-closure sampling.

The 1,2,4 and 1,3,5 TMB have no published toxicity information or State MCL from which to draw a PRG or calculate a screening level value. An approximation of the MCL of 1.75 µg/l was used in the screening level calculations for TMB. This value was selected because of the molecular resemblance of TMB to xylene, and the assumed similar structure activity.

Calculate, using the attenuation factor method described in the RWQCB document "Interim Assessment and Cleanup Guidebook," Appendix 4 - Attenuation Factor Method for VOCs, screening level values for:

- Chloroform
- Methylene chloride
- 1,2,4 Trimethylbenzene
- 1,3,5 Trimethylbenzene
- Chloride
- Ammonia
- TCE
- 1,1-DCA
- Dichlordifluoromethane
- Naphthalene
- MBAS
- Formaldehyde

EXAMPLE CALCULATION
VOCs AND OTHER AOCs

Assumptions:

- Ground water is at 45 feet bgs
- There is a 30-foot separation between the COCs and ground water.
- The separating lithology is 50 percent sand and 50 percent clay.

Attenuation Factor Method:

Sand, 30 feet above ground water after RWQCB, 1996 pp A-10 and Table 5-1.

$$\left(\frac{30-20}{40-20}\right) * (3-1)+1=2$$

Clay, 30 feet above ground water after RWQCB, 1996, pp A-10 and Table 5-1.

$$\left(\frac{30-20}{40-20}\right) * (26-13)+13=19.5$$

For soil 50 percent sand and clay:

- $(50\% * 2) + (50\% * 19.5) = 10.75$ *voc AttenuationFactor*

Therefore, the screening level value = COC, MCL * AF (10.75)

COC	MCL (Mg/L)	AF	Screening Level (mg/kg)
Chloroform	0.100	10.75	1.075
Methylene Chloride	0.005	10.75	0.054
1,2,4 TMB	1.75	10.75	18.8
1,3,5 TMB	1.75	10.75	18.8
Chloride	250	10.75	2688
Ammonia	45	10.75	484
MBAS	0.5	10.75	5.4
Formaldehyde	5.5	10.75	59.1
TCE	0.005	10.75	0.05
1,1-DCA	0.005	10.75	0.05
Dichlorodifluoromethane	0.39	10.75	4.19
Naphthalene	0.02	10.75	0.22

EXAMPLE CALCULATION
BTEX

Calculate the screening levels for BTEX compounds by interpolation of prescribed RWQCB values contained in Table 4-1 - Maximum Screening Levels for TPH and BTEX Above Drinking Water Aquifers.

Assumptions:

- Ground water is at 45 feet bgs;
- There is a 30-foot separation between the COCs and ground water;
- The separating lithology is 50 percent sand and 50 percent clay.

Benzene (mg/kg)

For sand:

$$\left(\frac{30-20}{80-20}\right) * (0.033-0.011) + 0.011 = 0.015$$

For clays:

$$\left(\frac{30-20}{80-20}\right) * (0.34 * 0.044) + 0.044 = 0.093$$

$$(50\% * 0.015) + (50\% * 0.093) = \underline{\underline{0.054}}\ \textit{Benzene}$$

Toluene (mg/kg)

For sand:

$$\left(\frac{30-20}{80-20}\right) * (2 - 0.3) + 0.3 = 0.58$$

For clay:

$$\left(\frac{30-20}{80-20}\right) * (18 - 2.3) + 2.3 = 4.92$$

$$(50\% * 0.58) + (50\% * 4.92) = \underline{\underline{2.75}}\ \textit{Toluene}$$

Ethylbenzene (mg/kg)

For sand:

$$\left(\frac{30-20}{80-20}\right) * (7 - 0.7) + 0.7 = 1.75$$

For clay:

$$\left(\frac{30-20}{80-20}\right) * (73 - 9) + 9 = 19.7$$

$$(50\% * 1.75) + (50\% * 19.7) = \underline{\underline{10.7}}\ \textit{Ethylbenzene}$$

Xylenes (mg/kg):

For sand:

$$\left(\frac{30-20}{80-20}\right) * (20-1.75) + 1.75 = 4.79$$

For clay:

$$\left(\frac{30-20}{80-20}\right) * (200-24.5) + 24.5 = 53.75$$

$$(50\% * 4.79) + (50\% * 53.75) = \underline{\underline{29.3}}\ \textit{Xylenes}$$